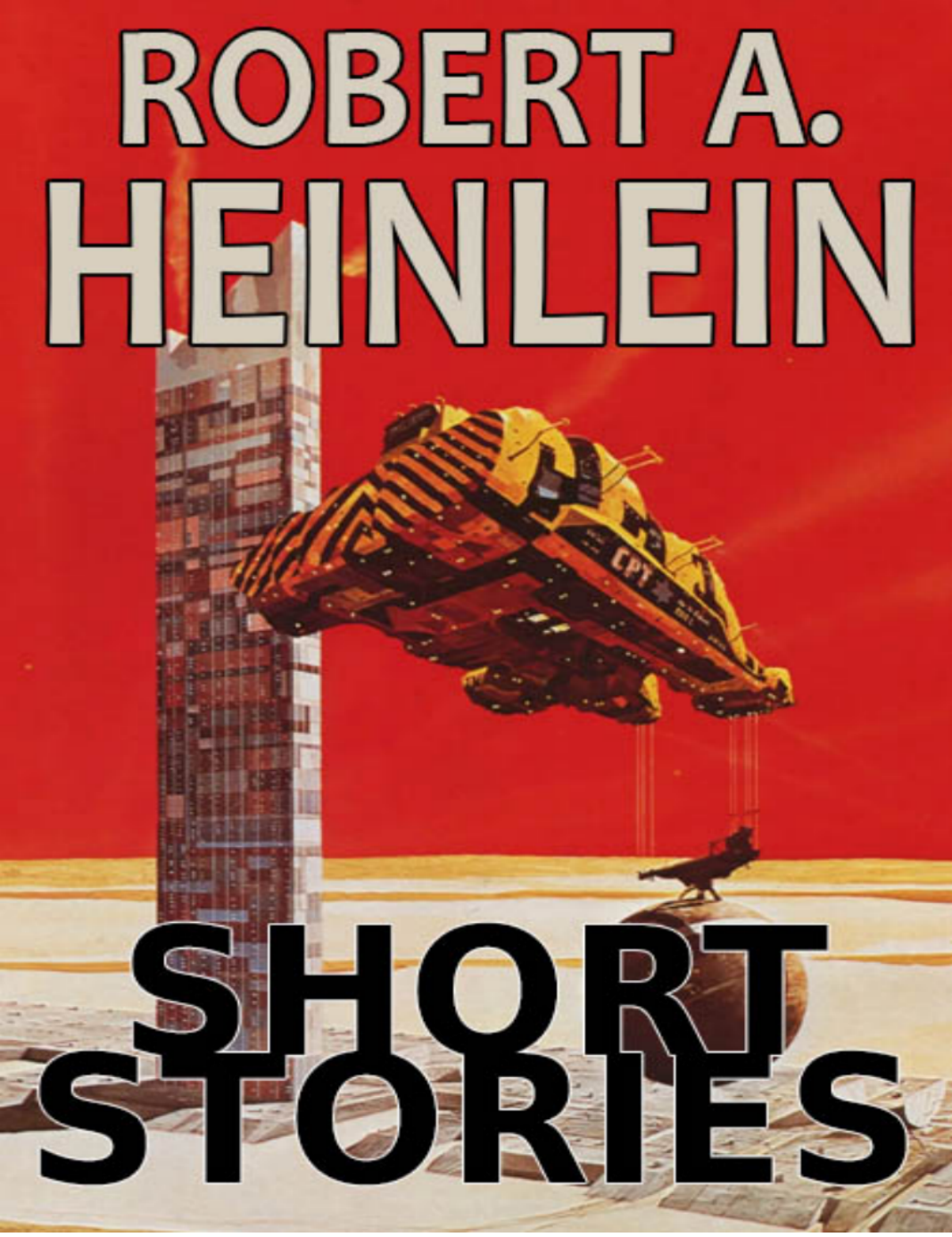
ROBERT A. HEINLEIN



SHORT STORIES

Contents:

Ordeal in Space Requiem Searchlight Space Jockey The Black Pits of Luna The Discovery of the Future The Green Hills of Earth The Long Watch All You Zombies

ORDEAL IN SPACE

Maybe we should never have ventured out into space. Our race has but two basic, innate fears; noise and the fear of falling. Those terrible heights - Why should any man in his right mind let himself be placed where he could fall . . . and fall . . . and fall - But all spacemen are crazy. Everybody knows that.

The medicos had been very kind, , he supposed. 'You're lucky. You want to remember that, old fellow. You're still young and your retired pay relieves you of all worry about your future. You've got both arms and legs and are in fine shape.'

'Fine shape!' His voice was unintentionally contemptuous.

'No, I mean it,' the chief psychiatrist had persisted gently. 'The little quirk you have does you no harm at all - except that you can't go into space again. I can't honestly call acrophobia a neurosis; fear of falling is normal and sane. You've just got it a little more strongly than most - but that is not abnormal, in view of what you have been through.'

The reminder set him to shaking again. He closed his eyes and saw the stars wheeling below him again. He was falling, falling endlessly. The psychiatrist's voice came through to him and pulled him back. 'Steady, old man! Look around you.'

'Sorry.'

'Not at all. Now tell me, what do you plan to do?'

'I don't know. Get a job, I suppose.'

'The Company will give you a job, you know.'

He shook his head. 'I don't want to hang around a spaceport.' Wear a little button in his shirt to show that he was once a man, be addressed by a courtesy title of captain, claim the privileges of the pilots' lounge on the basis of what he used to be, hear the shop talk die down whenever he approached a group, wonder what they were saying

behind his back - no, thank you!

'I think you're wise. Best to make a clean break, for a while at least, until you are feeling better.'

'You think I'll get over it?'

The psychiatrist pursed his lips. 'Possible. It's functional, you know. No trauma.'

'But you don't think so?'

'I didn't say that. I honestly don't know. We still know very little about what makes a man tick.'

'I see. Well, I might as well be leaving.'

The psychiatrist stood up and shoved out his hand. 'Holler if you want anything. And come back to see us in any case.'

'Thanks.'

'You're going to be all right. I know it.'

But the psychiatrist shook his head as his patient walked out. The man did not walk like a spaceman; the easy, animal self-confidence was gone.

Only a small part of Great New York was roofed over in those days; he stayed underground until he was in that section, then sought out a passageway lined with bachelor rooms. He stuck a coin in the slot of the first one which displayed a lighted 'vacant' sign, chucked his jump bag inside, and left. The monitor at the intersection gave him the address of the nearest placement office. He went there, seated himself at an interview desk, stamped in his finger prints, and started filling out forms. It gave him a curious back-to-the-beginning feeling; he had not looked for a job since pre-cadet days.

He left filling in his name to the last and hesitated even then. He had had more than his bellyful of publicity; he did not want to be recognized; he certainly did not want to be throbbed over - and most of all he did not want anyone telling him he was a hero. Presently he printed in the name 'William Saunders' and dropped the forms in the slot.

He was well into his third cigarette and getting ready to strike another

when the screen in front of him at last lighted up. He found himself staring at a nice-looking brunette. 'Mr. Saunders,' the image said, will you come inside, please? Door seventeen.'

The brunette in person was there to offer him a seat and a cigarette. 'Make yourself comfortable, Mr. Saunders. I'm Miss Joyce. I'd like to talk with you about your application.' He settled himself and waited, without speaking.

When she saw that he did not intend to speak, she added, 'Now take this name "William Saunders" which you have given us - we know who you are, of course, from your prints.

'I suppose so.'

'Of course I know what everybody knows about you, but your action in calling yourself "William Saunders", Mr. -'

'Saunders.'

'- Mr. Saunders, caused me to query the files.' She held up a microfilm spool, turned so that he might read his own name on it. 'I know quite a lot about you now - more than the public knows and more than you saw fit to put into your application. It's a good record, Mr. Saunders.'

'Thank you.'

'But I can't use it in placing you in a job. I can't even refer to it if you insist on designating yourself as "Saunders".'

'The name is Saunders.' His voice was flat, rather than emphatic.

'Don't be hasty, Mr. Saunders. There are many positions in which the factor of prestige can be used quite legitimately to obtain for a client a much higher beginning of pay than-'

'I'm not interested.'

She looked at him and decided not to insist. 'As you wish. If you will go to reception room B, you can start your classification and skill tests.'

'Thank you.'

'If you should change your mind later, Mr. Saunders, we will be glad to reopen the case. Through that door, please.'

Three days later found him at work for a small firm specializing in custom-built communication systems. His job was calibrating electronic equipment. It was soothing work, demanding enough to occupy his mind, yet easy for a man of his training and experience. At the end of his three months' probation he was promoted out of the helper category.

He was building himself a well-insulated rut, working, sleeping, eating, spending an occasional evening at the public library or working out at the YMCA - and never, under any circumstances, going out under the open sky nor up to any height, not even a theater balcony.

He tried to keep his past life shut out of his mind, but his memory of it was still fresh; he would find himself daydreaming - the star-sharp, frozen sky of Mars, or the roaring night life of Venusburg. He would see again the swollen, ruddy bulk of Jupiter hanging over the port on Ganymede, its oblate bloated shape impossibly huge and crowding the sky.

Or he might, for a time, feel again the sweet quiet of the long watches on the lonely reaches between the planets. But such reveries were dangerous; they cut close to the edge of his new peace of mind. It was easy to slide over and find himself clinging for life to his last handhold on the steel sides of the Valkyrie, fingers numb and failing, and nothing below him but the bottomless well of space.

Then he would come back to Earth, shaking uncontrollably and gripping his chair or the workbench.

The first time it had happened at work he had found one of his benchmates, Joe Tully, staring at him curiously. 'What's the trouble, Bill?' he had asked. 'Hangover?'

'Nothing,' he had managed to say. 'Just a chill.'

'You better take a pill. Come on - let's go to lunch.'

Tully led the way to the elevator; they crowded in. Most of the employees - even the women - preferred to go down via the drop chute, but Tully always used the elevator. 'Saunders', of course, never used the drop chute; this had eased them into the habit of lunching together. He knew that the chute was safe, that, even if the power should fail, safety nets would snap across at each floor level - but he could not force himself to step off the edge.

Tully said publicly that a drop-chute landing hurt his arches, but he confided privately to Saunders that he did not trust automatic machinery. Saunders nodded understandingly but said nothing. It warmed him toward Tully. He began feeling friendly and not on the defensive with another human being for the first time since the start of his new life. He began to want to tell Tully the truth about himself. If he could be sure that Joe would not insist on treating him as a hero - not that he really objected to the role of hero. As a kid, hanging around spaceports, trying to wangle chances to go inside the ships, cutting classes to watch take-offs, he had dreamed of being a 'hero' someday, a hero of the spaceways, returning in triumph from some incredible and dangerous piece of exploration. But he was troubled by the fact that he still had the same picture of what a hero should look like and how he should behave; it did not include shying away from open windows, being fearful of walking across an open square, and growing too upset to speak at the mere thought of boundless depths of space.

Tully invited him home for dinner. He wanted to go, but fended off the invitation while he inquired where Tully lived. The Shelton Homes, Tully told him, naming one of those great, boxlike warrens that used to disfigure the Jersey flats. 'It's a long way to come back,' Saunders said doubtfully, while turning over in his mind ways to get there without exposing himself to the things he feared.

'You won't have to come back,' Tully assured him. 'We've got a spare room. Come on. My old lady does her own cooking - that's why I keep her.'

'Well, all right,' he conceded. 'Thanks, Joe.' The La Guardia Tube would take him within a quarter of a mile; if he could not find a covered way he would take a ground cab and close the shades.

Tully met him in the hail and apologized in a whisper. 'Meant to have a young lady for you, Bill. Instead we've got my brother-in-law. He's a louse. Sorry.'

'Forget it, Joe. I'm glad to be here.' He was indeed. The discovery that Bill's flat was on the thirty-fifth floor had dismayed him at first, but he was delighted to find that he had no feeling of height. The lights were on, the windows occulted, the floor under him was rock solid; he felt warm and safe. Mrs. Tully turned out in fact to be a good cook, to his surprise - he had the bachelor's usual distrust of amateur cooking. He let himself go to the pleasure of feeling at home and safe and wanted; he managed not even to hear most of the aggressive and opinionated

remarks of Joe's in-law.

After dinner he relaxed in an easy chair, glass of beer in hand, and watched the video screen. It was a musical comedy; he laughed more heartily than he had in months. Presently the comedy gave way to a religious program, the National Cathedral Choir; he let it be, listening with one ear and giving some attention to the conversation with the other.

The choir was more than half way through Prayer for Travelers before he became fully aware of what they were singing:

Hear us when we pray to Thee

For those in peril on the sea.

'Almighty Ruler of them all

Whose power extends to great and small,

Who guides the stars and steadfast law,

Whose least creation fills with awe;

Oh, grant Thy mercy and Thy grace

To those who venture into space.'

He wanted to switch it off, but he had to hear it out, he could not stop listening to it, though it hurt him in his heart with the unbearable homesickness of the hopelessly exiled. Even as a cadet this one hymn could fill his eyes with tears; now he kept his face turned away from the others to try to hide from them the drops wetting his cheeks.

When the choir's 'amen' let him do so he switched quickly to some other - any other - program and remained bent over the instrument, pretending to fiddle with it, while he composed his features. Then he turned back to the company, outwardly serene, though it seemed to him that anyone could see the hard, aching knot in his middle.

The brother-in-law was still sounding off.

'We ought to annex 'em,' he was saying. 'That's what we ought to do. Three-Planets Treaty - what a lot of ruddy rot! What right have they got to tell us what we can and can't do on Mars?'

'Well, Ed,' Tully said mildly, 'it's their planet, isn't it? They were there

first.'

Ed brushed it aside. 'Did we ask the Indians whether or not they wanted us in North America? Nobody has any right to hang on to something he doesn't know how to use. With proper exploitation -'

'You been speculating, Ed?'

'Huh? It wouldn't be speculation if the government wasn't made up of a bunch of weak-spined old women. "Rights of Natives", indeed. What rights do a bunch of degenerates have?'

Saunders found himself contrasting Ed Schultz with Knath Sooth, the only Martian he himself had ever known well. Gentle Knath, who had been old before Ed was born, and yet was rated as young among his own kind. Knath... why, Knath could sit for hours with a friend or trusted acquaintance, saying nothing, needing to say nothing. 'Growing together' they called it - his entire race had so grown together that they had needed no government, until the Earthman came.

Saunders had once asked his friend why he exerted himself so little, was satisfied with so little. More than an hour passed and Saunders was beginning to regret his inquisitiveness when Knath replied, 'My fathers have labored and I am weary.'

Saunders sat up and faced the brother-in-law. 'They are not degenerate.'

'Huh? I suppose you are an expert!'

'The Martians aren't degenerate, they're just tired,' Saunders persisted.

Tully grinned. His brother-in-law saw it and became surly. 'What gives you the right to an opinion? Have you ever been to Mars?'

Saunders realized suddenly that he had let his censors down. 'Have you?' he answered cautiously.

'That's beside the point. The best minds all agree -' Bill let him go on and did not contradict him again. It was a relief when Tully suggested that, since they all had to be up early, maybe it was about time to think about beginning to get ready to go to bed.

He said goodnight to Mrs. Tully and thanked her for a wonderful dinner, then followed Tully into the guest room. 'Only way to get rid

of that family curse we're saddled with, Bill,' he apologized. 'Stay up as long as you like.' Tully stepped to the window and opened it. 'You'll sleep well here. We're up high enough to get honest-to-goodness fresh air.' He stuck his head out and took a couple of big breaths. 'Nothing like the real article,' he continued as he withdrew from the window. 'I'm a country boy at heart. What's the matter, Bill?'

'Nothing. Nothing at all.'

'I thought you looked a little pale. Well, sleep tight. I've already set your bed for seven; that'll give us plenty of time.'

'Thanks, Joe. Goodnight.' As soon as Tully was out of the room he braced himself, then went over and closed the window. Sweating, he turned away and switched the ventilation back on. That done, he sank down on the edge of the bed.

He sat there for a long time, striking one cigarette after another. He knew too well that the peace of mind he thought he had regained was unreal. There was nothing left to him but shame and a long, long hurt. To have reached the point where he had to knuckle under to a tenth-rate knothead like Ed Schultz - it would have been better if he had never come out of the Valkyrie business.

Presently he took five grains of 'Fly-Rite' from his pouch, swallowed it, and went to bed. He got up almost at once, forced himself to open the window a trifle, then compromised by changing the setting of the bed so that it would not turn out the lights after he got to sleep.

He had been asleep and dreaming for an indefinitely long time. He was back in space again - indeed, he had never been away from it. He was happy, with the full happiness of a man who has awakened to find it was only a bad dream.

The crying disturbed his serenity. At first it made him only vaguely uneasy, then he began to feel in some way responsible - he must do something about it. The transition to falling had only dream logic behind it, but it was real to him. He was grasping, his hands were slipping, had slipped - and there was nothing under him but the black emptiness of space - He was awake and gasping, on Joe Tully's guest-room bed; the lights burned bright around him.

But the crying persisted.

He shook his head, then listened. It was real all right. Now he had it identified - a cat, a kitten by the sound of it.

He sat up. Even if he had not had the spaceman's traditional fondness for cats, he would have investigated. However, he liked cats for themselves, quite aside from their neat shipboard habits, their ready adaptability to changing accelerations, and their usefulness in keeping the ship free of those other creatures that go wherever man goes. So he got up at once and looked for this one.

A quick look around showed him that the kitten was not in the room, and his ear led him to the correct spot; the sound came in through the slightly opened window. He shied off, stopped, and tried to collect his thoughts.

He told himself that it was unnecessary to do anything more; if the sound came in through the window, then it must be because it came out of some nearby window. But he knew that he was lying to himself; the sound was close by. In some impossible way the cat was just outside his window, thirty-five stories above the street.

He sat down and tried to strike a cigarette, but the tube broke in his fingers. He let the fragments fall to the floor, got up and took six nervous steps toward the window, as if he were being jerked along. He sank down to his knees, grasped the window and threw it wide open, then clung to the windowsill, his eyes tight shut.

After a time the sill seemed to steady a bit. He opened his eyes, gasped, and shut them again. Finally he opened them again, being very careful not to look out at the stars, not to look down at the street. He had half expected to find the cat on a balcony outside his room - it seemed the only reasonable explanation. But there was no balcony, no place at all where a cat could reasonably be.

However, the mewing was louder than ever. It seemed to come from directly under him. Slowly he forced his head out, still clinging to the sill, and made himself look down. Under him, about four feet lower than the edge of the window, a narrow ledge ran around the side of the building. Seated on it was a woe-begone ratty-looking kitten. It stared up at him and meowed again.

It was barely possible that, by clinging to the sill with one hand and making a long arm with the other, he could reach it without actually going out the window, he thought - if he could bring himself to do it. He considered calling Tully, then thought better of it. Tully was shorter than he was, had less reach. And the kitten had to be rescued now, before the fluff-brained idiot jumped or fell.

He tried for it. He shoved his shoulders out, clung with his left arm and reached down with his right. Then he opened his eyes and saw that he was a foot or ten inches away from the kitten still. It sniffed curiously in the direction of his hand.

He stretched till his bones cracked. The kitten promptly skittered away from his clutching fingers, stopping a good six feet down the ledge. There it settled down and commenced washing its face.

He inched back inside and collapsed, sobbing, on the floor underneath the window. 'I can't do it,' he whispered. 'I can't do it. Not again -'

The Rocket Ship Valkyrie was two hundred and forty-nine days out from Earth-Luna Space Terminal and approaching Mars Terminal on Deimos, outer Martian satellite. William Cole, Chief Communications Officer and relief pilot, was sleeping sweetly when his assistant shook him. 'Hey! Bill! Wake up - we're in a jam.'

'Huh? Wazzat?' But he was already reaching for his socks. 'What's the trouble, Tom?'

Fifteen minutes later he knew that his junior officer had not exaggerated; he was reporting the facts to the Old Man - the primary piloting radar was out of whack. Tom Sandburg had discovered it during a routine check, made as soon as Mars was inside the maximum range of the radar pilot. The captain had shrugged. 'Fix it, Mister - and be quick about it. We need it.'

Bill Cole shook his head. 'There's nothing wrong with it, Captain - inside. She acts as if the antenna were gone completely.'

'That's impossible. We haven't even had a meteor alarm.'

'Might be anything, Captain. Might be metal fatigue and it just fell off. But we've got to replace that antenna. Stop the spin on the ship and I'll go out and fix it. I can jury-rig a replacement while she loses her spin.'

The Valkyrie was a luxury ship, of her day. She was assembled long before anyone had any idea of how to produce an artificial gravity field. Nevertheless she had pseudogravity for the comfort of her passengers. She spun endlessly around her main axis, like a shell from a rifled gun; the resulting angular acceleration - miscalled 'centrifugal force' - kept her passengers firm in their beds, or steady on their feet. The spin was started as soon as her rockets stopped blasting at the beginning of a trip and was stopped only when it was necessary to maneuver into a landing. It was accomplished, not by magic, but by

reaction against the contrary spin of a flywheel located on her centerline.

The captain looked annoyed. 'I've started to take the spin off, but I can't wait that long. Jury-rig the astrogational radar for piloting.'

Cole started to explain why the astrogational radar could not be adapted to short-range work, then decided not to try. 'It can't be done, sir. It's a technical impossibility.'

'When I was your age I could jury-rig anything! Well, find me an answer, Mister. I can't take this ship down blind. Not even for the Harriman Medal.'

Bill Cole hesitated for a moment before replying. 'I'll have to go out while she's still got spin on her, Captain, and make the replacement. There isn't any other way to do it.'

The captain looked away from him, his jaw muscles flexed. 'Get the replacement ready. Hurry up about it.'

Cole found the captain already at the airlock when he arrived with the gear he needed for the repair. To his surprise the Old Man was suited up. 'Explain to me what I'm to do,' he ordered Bill.

'You're not going out, sir?' The captain simply nodded.

Bill took a look at his captain's waist line, or where his waist line used to be. Why, the Old Man must be thirty-five if he was a day! 'I'm afraid I can't explain too clearly. I had expected to make the repair myself.'

'I've never asked a man to do a job I wouldn't do myself. Explain it to me.'

'Excuse me, sir - but can you chin yourself with one hand?'

'What's that got to do with it?'

'Well, we've got forty-eight passengers, sir, and -' 'Shut up!'

Sandburg and he, both in space suits, helped the Old Man down the hole after the inner door of the lock was closed and the air exhausted. The space beyond the lock was a vast, starflecked emptiness. With spin still on the ship, every direction outward was 'down', down for millions of uncounted miles. They put a safety line on him, of course -

nevertheless it gave him a sinking feeling to see the captain's head disappear in the bottomless, black hole.

The line paid out steadily for several feet, then stopped. When it had been stopped for several minutes, Bill leaned over and touched his helmet against Sandburg's. 'Hang on to my feet. I'm going to take a look.'

He hung head down out the lock and looked around. The captain was stopped, hanging by both hands, nowhere near the antenna fixture. He scrambled back up and reversed himself. 'I'm going out.'

It was no great trick, he found, to hang by his hands and swing himself along to where the captain was stalled. The Valkyrie was a space-to-space ship, not like the sleek-sided jobs we see around earthports; she was covered with handholds for the convenience of repairmen at the terminals. Once he reached him, it was possible, by grasping the safe steel rung that the captain clung to, to aid him in swinging back to the last one he had quitted. Five minutes later Sandburg was pulling the Old Man up through the hole and Bill was scrambling after him.

He began at once to unbuckle the repair gear from the captain's suit and transfer it to his own. He lowered himself back down the hole and was on his way before the older man had recovered enough to object, if he still intended to.

Swinging out to where the antenna must be replaced was not too hard, though he had all eternity under his toes. The suit impeded him a little - the gloves were clumsy - but he was used to spacesuits. He was a little winded from helping the captain, but he could not stop to think about that. The increased spin bothered him somewhat; the airlock was nearer the axis of spin than was the antenna - he felt heavier as he moved out.

Getting the replacement antenna shipped was another matter. It was neither large nor heavy, but he found it impossible to fasten it into place. He needed one hand to cling by, one to hold the antenna, and one to handle the wrench. That left him shy one hand, no matter how he tried it.

Finally he jerked his safety line to signal Sandburg for more slack. Then he unshackled it from his waist, working with one hand, passed the end twice through a handhold and knotted it; he left about six feet of it hanging free. The shackle on the free end he fastened to another

handhold. The result was a loop, a bight, an improvised bosun's chair, which would support his weight while he man-handled the antenna into place. The job went fairly quickly then.

He was almost through. There remained one bolt to fasten on the far side, away from where he swung. The antenna was already secured at two points and its circuit connection made. He decided he could manage it with one hand. He left his perch and swung over, monkey fashion.

The wrench slipped as he finished tightening the bolt; it slipped from his grasp, fell free. He watched it go, out and out and out, down and down and down, until it was so small he could no longer see it. It made him dizzy to watch it, bright in the sunlight against the deep black of space. He had been too busy to look down, up to now.

He shivered. 'Good thing I was through with it,' he said. 'It would be a long walk to fetch it.' He started to make his way back.

He found that he could not.

He had swung past the antenna to reach his present position, using a grip on his safety-line swing to give him a few inches more reach. Now the loop of line hung quietly, just out of reach. There was no way to reverse the process.

He hung by both hands and told himself not to get panicky - he must think his way out. Around the other side? No, the steel skin of the Valkyrie was smooth there - no handhold for more than six feet. Even if he were not tired - and he had to admit that he was, tired and getting a little cold - even if he were fresh, it was an impossible swing for anyone not a chimpanzee.

He looked down - and regretted it.

There was nothing below him but stars, down and down, endlessly. Stars, swinging past as the ship spun with him, emptiness of all time and blackness and cold.

He found himself trying to hoist himself bodily onto the single narrow rung he clung to, trying to reach it with his toes. It was a futile, strength-wasting excess. He quieted his panic sufficiently to stop it, then hung limp.

It was easier if he kept his eyes closed. But after a while he always had to open them and look. The Big Dipper would swing past and then,

presently, Orion. He tried to compute the passing minutes in terms of the number of rotations the ship made, but his mind would not work clearly, and, after a while, he would have to shut his eyes.

His hands were becoming stiff - and cold. He tried to rest them by hanging by one hand at a time. He let go with his left hand, felt pins-and-needles course through it, and beat it against his side. Presently it seemed time to spell his right hand.

He could no longer reach up to the rung with his left hand. He did not have the power left in him to make the extra pull; he was fully extended and could not shorten himself enough to get his left hand up.

He could no longer feel his right hand at all.

He could see it slip. It was slipping - The sudden release in tension let him know that he was falling falling. The ship dropped away from him.

He came to with the captain bending over him. 'Just keep quiet, Bill.'

'Where -,

'Take it easy. The patrol from Deimos was already close by when you let go. They tracked you on the 'scope, matched orbits with you, and picked you up. First time in history, I guess. Now keep quiet. You're a sick man - you hung there more than two hours, Bill.'

The meowing started up again, louder than ever. He got up on his knees and looked out over the windowsill. The kitten was still away to the left on the ledge. He thrust his head cautiously out a little further, remembering not to look at anything but the kitten and the ledge. 'Here, kitty!' he called. 'Here, kit-kit-kitty! Here, kitty, come kitty!'

The kitten stopped washing and managed to look puzzled.

'Come, kitty,' he repeated softly. He let go the windowsill with his right hand and gestured toward it invitingly. The kitten approached about three inches, then sat down. 'Here, kitty,' he pleaded and stretched his arm as far as possible.

The fluff ball promptly backed away again.

He withdrew his arm and thought about it. This was getting nowhere, he decided. If he were to slide over the edge and stand on the ledge,

he could hang on with one arm and be perfectly safe. He knew that, he knew it would be safe - he needn't look down!

He drew himself back inside, reversed himself, and, with great caution, gripping the sill with both arms, let his legs slide down the face of the building. He focused his eyes carefully on the corner of the bed.

The ledge seemed to have been moved. He could not find it, and was beginning to be sure that he had reached past it, when he touched it with one toe - then he had both feet firmly planted on it. It seemed about six inches wide. He took a deep breath.

Letting go with his right arm, he turned and faced the kitten. It seemed interested in the procedure but not disposed to investigate more closely. If he were to creep along the ledge, holding on with his left hand, he could just about reach it from the corner of the window - He moved his feet one at a time, baby fashion, rather than pass one past the other. By bending his knees a trifle, and leaning, he could just manage to reach it. The kitten sniffed his groping fingers, then leaped backward. One tiny paw missed the edge; it scrambled and regained its footing. 'You little idiot!' he said indignantly, 'do you want to bash your brains out?'

'If any,' he added. The situation looked hopeless now; the baby cat was too far away to be reached from his anchorage at the window, no matter how he stretched. He called 'Kitty, kitty' rather hopelessly, then stopped to consider the matter.

He could give it up.

He could prepare himself to wait all night in the hope that the kitten would decide to come closer. Or he could go get it.

The ledge was wide enough to take his weight. If he made himself small, flat to the wall, no weight rested on his left arm. He moved slowly forward, retaining the grip on the window as long as possible, inching so gradually that he hardly seemed to move. When the window frame was finally out of reach, when his left hand was flat to smooth wall, he made the mistake of looking down, down, past the sheer wall at the glowing pavement far below.

He pulled his eyes back and fastened them on a spot on the wall, level with his eyes and only a few feet away. He was still there!

And so was the kitten. Slowly he separated his feet, moving his right

foot forward, and bent his knees. He stretched his right hand along the wall, until he was over and a little beyond the kitten.

He brought it down in a sudden swipe, as if to swat a fly. He found himself with a handful of scratching, biting fur.

He held perfectly still then, and made no attempt to check the minor outrages the kitten was giving him. Arms still outstretched, body flat to the wall, he started his return. He could not see where he was going and could not turn his head without losing some little of his margin of balance. It seemed a long way back, longer than he had come, when at last the fingertips of his left hand slipped into the window opening.

He backed up the rest of the way in a matter of seconds, slid both arms over the sill, then got his right knee over. He rested himself on the sill and took a deep breath. 'Man!' he said aloud. 'That was a tight squeeze. You're a menace to traffic, little cat.'

He glanced down at the pavement. It was certainly a long way down - looked hard, too.

He looked up at the stars. Mighty nice they looked and mighty bright. He braced himself in the window frame, back against one side, foot pushed against the other, and looked at them. The kitten settled down in the cradle of his stomach and began to buzz. He stroked it absent-mindedly and reached for a cigarette. He would go out to the port and take his physical and his psycho tomorrow, he decided. He scratched the kitten's ears. 'Little fluff head,' he said, 'how would you like to take a long, long ride with me?'

REQUIEM

On a high hill in Samoa there is a grave. Inscribed on the marker are these words:

"Under the wide and starry sky Dig my grave and let me lie Glad did I live and gladly die And I lay me down with a will! "This be the verse which you grave for me: 'Here he lies where he longed to be, Home is the sailor, home from the sea, And the hunter home from the hill.'"

These lines appear another place -- scrawled on a shipping tag torn from a compressed-air container, and pinned to the ground with a knife.

It wasn't much of a fair, as fairs go. The trottin' races didn't promise much excitement, even though several entries claimed the blood of

the immortal Dan Patch. The tents and concession booths barely covered the circus grounds, and the pitchmen seemed discouraged.

D.D. Harriman's chauffeur could not see any reason for stopping. They were due in Kansas City for a directors' meeting, that is to say, Harriman was. The chauffeur had private reasons for promptness, reasons involving darktown society on Eighteenth Street. But the Boss not only stopped, but hung around.

Bunting and a canvas arch made the entrance to a large enclosure beyond the race track. Red and gold letters announced:

This way to the MOON ROCKET!!!! See it in actual flight! Public Demonstration Flights Twice Daily This is the ACTUAL TYPE used by the First Man to reach the MOON!!! YOU can ride in it!! -- $50.OO

A boy, nine or ten years old, hung around the entrance and stared at the posters.

"Want to see the ship, son?"

The kid's eyes shone. "Gee, mister. I sure would."

"So would I. Come on." Harriman paid out a dollar for two pink tickets which entitled them to enter the enclosure and examine the rocket ship. The kid took his and ran on ahead with the single-mindedness of youth. Harriman looked over the stubby curved lines of the ovoid body. He noted with a professional eye that she was a single-jet type with fractional controls around her midriff. He squinted through his glasses at the name painted in gold on the carnival red of the body, _Care Free_. He paid another quarter to enter the control cabin.

When his eyes had adjusted to the gloom caused by the strong ray filters of the ports he let them rest lovingly on the keys of the console and the semi-circle of dials above. Each beloved gadget was in its proper place. He knew them, graven in his heart.

While he mused over the instrument board, with the warm liquid of content soaking through his body, the pilot entered and touched his arm.

"Sorry, sir. We've got to cast loose for the flight."

"Eh?" Harriman started, then looked at the speaker. Handsome devil, with a good skull and strong shoulders, reckless eyes and a self-indulgent mouth, but a firm chin. "Oh, excuse me, Captain."

"Quite all right."

"Oh, I say, Captain, er, uh. . ."

"McIntyre."

"Captain McIntyre, could you take a passenger this trip?" The old man leaned eagerly toward him.

"Why, yes, if you wish. Come along with me." He ushered Harriman into a shed marked OFFICE which stood near the gate. "Passenger for a check over, doc."

Harriman looked startled but permitted the medico to run a stethoscope over his thin chest, and to strap a rubber bandage around his arm. Presently he unstrapped it, glanced at McIntyre, and shook his head.

"No go, doc?"

"That's right, Captain."

Harriman looked from face to face. "My heart's all right -- that's just a flutter."

The physician's brows shot up. "Is it? But it's not just your heart; at your age your bones are brittle, too brittle to risk a take-off."

"Sorry, sir," added the pilot, "but the Bates County Fair Association pays the doctor here to see to it that I don't take anyone up who might be hurt by the acceleration."

The old man's shoulders drooped miserably. "I rather expected it."

"Sorry, sir." McIntyre turned to go, but Harriman followed him out.

"Excuse me, Captain--"

"Yes?"

"Could you and your, uh, engineer have dinner with me after your flight?"

The pilot looked at him quizzically. "I don't see why not. Thanks."

"Captain McIntyre, it is difficult for me to see why anyone would quit the Earth-Moon run." Fried chicken and hot biscuits in a private

dining room of the best hotel the little town of Butler afforded, three-star Hennessey and Corona-Coronas had produced a friendly atmosphere in which three men could talk freely.

"Well, I didn't like it."

"Aw, don't give him that, Mac -- you know damn well it was Rule G that got you." McIntyre's mechanic poured himself another brandy as he spoke.

McIntyre looked sullen. "Well, what if I did take a couple o' drinks? Anyhow, I could have squared that -- it was the damn persnickety regulations that got me fed up. Who are you to talk? -- Smuggler!"

"Sure I smuggled! Who wouldn't with all those beautiful rocks just aching to be taken back to Earth. I had a diamond once as big as... But if I hadn't been caught I'd be in Luna City tonight. And so would you, you drunken blaster ... with the boys buying us drinks, and the girls smiling and making suggestions..." He put his face down and began to weep quietly.

McIntyre shook him. "He's drunk."

"Never mind." Harriman interposed a hand. "Tell me, are you really satisfied not to be on the run any more?"

McIntyre chewed his lip. "No, he's right of course. This barnstorming isn't what it's all cracked up to be. We've been hopping junk at every pumpkin doin's up and down the Mississippi valley -- sleeping in tourist camps, and eating at grease burners. Half the time the sheriff has an attachment on the ship, the other half the Society for the Prevention of Something or Other gets an injunction to keep us on the ground. It's no sort of a life for a rocket man."

"Would it help any for you to get to the Moon?"

"Well. . . Yes. I couldn't get back on the Earth-Moon run, but if I was in Luna City, I could get a job hopping ore for the Company -- they're always short of rocket pilots for that, and they wouldn't mind my record. If I kept my nose clean, they might even put me back on the run, in time."

Harriman fiddled with a spoon, then looked up. "Would you young gentlemen be open to a business proposition?"

"Perhaps. What is it?"

"You own the _Care Free_?"

"Yeah. That is, Charlie and I do -- barring a couple of liens against her. What about it?"

"I want to charter her... for you and Charlie to take me to the Moon!"

Charlie sat up with a jerk. "D'joo hear what he said, Mac? He wants us to fly that old heap to the Moon!"

McIntyre shook his head. "Can't do it, Mister Harriman. The old boat's worn out. You couldn't convert to escape fuel. We don't even use standard juice in her -- just gasoline and liquid air. Charlie spends all of his time tinkering with her at that She's going to blow up some day."

"Say, Mister Harriman," put in Charlie, "what's the matter with getting an excursion permit and going in a Company ship?"

"No, son," the old man replied, "I can't do that. You know the conditions under which the U. N. granted the Company a monopoly on lunar exploitation -- no one to enter space who was not physically qualified to stand up under it. Company to take full responsibility for the safety and health of all citizens beyond the stratosphere. The official reason for granting the franchise was to avoid unnecessary loss of life during the first few years of space travel."

"And you can't pass the physical exam?" Harriman shook his head.

"Well, what the hell -- if you can afford to hire us, why don't you just bribe yourself a brace of Company docs? It's been done before."

Harriman smiled ruefully. "I know it has, Charlie, but it won't work for me. You see, I'm a tad too prominent. My full name is Delos D. Harriman."

"What? You are old D.D.? But hell's bells, you own a big slice of the Company yourself -- you practically are the Company; you ought to be able to do anything you like, rules or no rules."

"That is a not unusual opinion, son, but it is incorrect. Rich men aren't more free than other men; they are less free, a good deal less free. I tried to do what you suggest, but, the other directors would not permit me. They are afraid of losing their franchise. It costs them a good deal in -- uh -- political contact expenses to retain it, as it is."

"Well, I'll be a-- Can you tie that, Mac? A guy with lots of dough, and he can't spend it the way he wants to." McIntyre did not answer, but waited for Harriman to continue.

"Captain McIntyre, if you had a ship, would you take me?"

McIntyre rubbed his chin. "It's against the law."

"I'd make it worth your while."

"Sure he would, Mr. Harriman. Of course you would, Mac. Luna City! Oh, baby!"

"Why do you want to go to the Moon so badly, Mister Harriman?"

"Captain, it's the one thing I've really wanted to do all my life -- ever since I was a young boy. I don't know whether I can explain it to you, or not. You young fellows have grown up to rocket travel the way I grew up to aviation. I'm a great deal older than you are, at least fifty years older. When I was a kid practically nobody believed that men would ever reach the Moon. You've seen rockets all your lives, and the first to reach the Moon got there before you were a young boy. When I was a boy they laughed at the idea.

"But I believed -- I believed. I read Verne, and Wells, and Smith, and I believed that we could do it -- that we would do it. I set my heart on being one of the men to walk the surface of the Moon, to see her other side, and to look back on the face of the Earth, hanging in the sky.

"I used to go without my lunches to pay my dues in the American Rocket Society, because I wanted to believe that I was helping to bring the day nearer when we would reach the Moon. I was already an old man when that day arrived. I've lived longer than I should, but I would not let myself die... I will not! -- until I have set foot on the Moon."

McIntyre stood up and put out his hand. "You find a ship, Mister Harriman. I'll drive 'er."

"Atta' boy, Mac! I told you he would, Mister Harriman."

Harriman mused and dozed during the half-hour run to the north into Kansas City, dozed in the light troubled sleep of old age. Incidents out of a long life ran through his mind in vagrant dreams. There was that time... oh, yes, 1910 ... A little boy on a warm spring night;

"What's that, Daddy?" -- "That's Halley's comet, Sonny." -- "Where did it come from?" -- "I don't know, Son. From way out in the sky somewhere." -- "It's _beyoootiful_, Daddy. I want to touch it." -- "'Fraid not, Son."

"Delos, do you mean to stand there and tell me you put the money we had saved for the house into that crazy rocket company?" -- "Now, Charlotte, please! It's not crazy; it's a sound business investment. Someday soon rockets will fill the sky. Ships and trains will be obsolete. Look what happened to the men that had the foresight to invest in Henry Ford." -- "We've been all over this before." -- "Charlotte, the day will come when men will rise up off the Earth and visit the Moon, even the planets. This is the beginning." -- "Must you shout?" -- "I'm sorry, but--" -- "I feel a headache coming on. Please try to be a little quiet when you come to bed."

He hadn't gone to bed. He had sat out on the veranda all night long, watching the full Moon move across the sky. There would be the devil to pay in the morning, the devil and a thin-lipped silence. But he'd stick by his guns. He'd given in on most things, but not on this. But the night was his. Tonight he'd be alone with his old friend. He searched her face. Where was Mare Crisium? Funny, he couldn't make it out. He used to be able to see it plainly when he was a boy. Probably needed new glasses -- this constant office work wasn't good for his eyes.

But he didn't need to see, he knew where they all were; Crisium, Mare Fecunditatis, Mare Tranquilitatis -- that one had a satisfying roll! -- the Apennines, the Carpathians, old Tycho with it's mysterious rays.

Two hundred and forty thousand miles -- ten times around the Earth. Surely men could bridge a little gap like that. Why, he could almost reach out and touch it, nodding there behind the elm trees. Not that he could help. He hadn't the education.

"Son, I want to have a little serious talk with you." -- "Yes, Mother." -- "I know you had hoped to go to college next year--" (Hoped! He had lived for it. The University of Chicago to study under Moulton, then on to the Yerkes Observatory to work under the eye of Dr. Frost himself) -- "and I had hoped so too. But with your father gone, and the girls growing up, it's harder to make ends meet. You've been a good boy, and worked hard to help out. I know you'll understand." -- "Yes, Mother."

"Extra! Extra! STRATOSPHERE ROCKET REACHES PARIS. Read

aaaaallllll about 't." The the little man in the bifocals snatched at the paper and hurried back to the office. -- "Look at this, George." -- "Huh? Hmm, interesting, but what of it?" -- "Can't you see? The next stage is to the Moon!" -- "God, but you're a sucker, Delos. The trouble with you is, you read too many of those trashy magazines. Now I caught my boy reading one of 'em just last week, _Stunning Stories_, or some such title, and dressed him down proper. Your folks should have done you the same favor." -- Harriman squared his narrow, middle-aged shoulders. "They will so reach the Moon!" -- His partner laughed. "Have it your own way. If baby wants the Moon, papa bring it for him. But you stick to your discounts and commissions; that's where the money is."

The big car droned down the Paseo, and turned off on Armour Boulevard. Old Harriman stirred uneasily in his sleep and muttered to himself.

"But Mister Harriman--" The young man with the notebook was plainly perturbed. The old man grunted.

"You heard me. Sell 'em. I want every share I own realized in cash as rapidly as possible; Spaceways, Spaceways Provisioning Company, Artemis Mines, Luna City Recreations, the whole lot of them."

"It will depress the market. You won't realize the full value of your holdings."

"Don't you think I know that? I can afford it."

"What about the shares you had earmarked for Richardson Observatory, and for the Harriman Scholarships?"

"Oh, yes. Don't sell those. Set up a trust. Should have done it long ago. Tell young Kamens to draw up the papers. He knows what I want"

The interoffice visor flashed into life. "The gentlemen are here, Mr. Harriman."

"Send 'em in. That's all, Ashley. Get busy." Ashley went out as McIntyre and Charlie entered. Harriman got up and trotted forward to greet them.

"Come in, boys, come in. I'm so glad to see you. Sit down. Sit down. Have a cigar."

"Mighty pleased to see you, Mr. Harriman," acknowledged Charlie. "In

fact, you might say we need to see you."

"Some trouble, gentlemen?" Harriman glanced from face to face. McIntyre answered him.

"You still mean that about a job for us, Mr. Harriman?"

"Mean it? Certainly, I do. You're not backing out on me?"

"Not at all. We need that job now. You see the _Care Free_ is lying in the middle of the Osage River, with her jet split clear back to the injector."

"Dear me! You weren't hurt?"

"No, aside from sprains and bruises. We jumped."

Charlie chortled. "I caught a catfish with my bare teeth."

In short order they got down to business. "You two will have to buy a ship for me. I can't do it openly; my colleagues would figure out what I mean to do and stop me. I'll supply you with all the cash you need. You go out and locate some sort of a ship that can be refitted for the trip. Work, up some good story about how you are buying it for some playboy as a stratosphere yacht, or that you plan to establish an arctic-antarctic tourist route. Anything as long as no one suspects that she is being-outfitted for space flight.

"Then, after the Department of Transport licenses her for strato flight, you move out to a piece of desert out west -- I'll find a likely parcel of land and buy it -- and then I'll join you. Then we'll install the escape-fuel tanks, change the injectors, and timers, and so forth, to fit her for the hop. How about it?"

McIntyre looked dubious. "It'll take a lot of doing. Charlie, do you think you can accomplish that changeover without a dockyard and shops?"

"Me? Sure I can -- with your thick-fingered help. Just give me the tools and materials I want, and don't hurry me too much. Of course, it won't be fancy--"

"Nobody wants it to be fancy. I just want a ship that won't blow when I start slapping the keys. Isotope fuel is no joke."

"It won't blow, Mac."

"That's what you thought about the _Care Free_."

"That ain't fair, Mac. I ask you, Mr. Harriman -- That heap was junk, and we knew it. This'll be different. We're going to spend some dough and do it right. Ain't we, Mr. Harriman?"

Harriman patted him on the shoulder. "Certainly we are, Charlie. You can have all the money you want. That's the least of our worries. Now do the salaries and bonuses I mentioned suit you? I don't want you to be short."

"--as you know, my clients are his nearest relatives and have his interests at heart. We contend that Mr. Harriman's conduct for the past several weeks, as shown by the evidence here adduced, gives clear indication that a mind, once brilliant in the world of finance, has become senile. It is, therefore, with the deepest regret that we pray this honorable court, if it pleases, to declare Mr. Harriman incompetent and to assign a conservator to protect his financial interests and those of his future heirs and assigns." The attorney sat down, pleased with himself.

Mr. Kamens took the floor. "May it please the court, if my esteemed friend is quite through, may I suggest that in his last few words be gave away his entire thesis. '--the financial interests of future heirs and assigns.' It is evident that the petitioners believe that my client should conduct his affairs in such a fashion as to insure that his nieces and nephews, and their issue, will be supported in unearned luxury for the rest of their lives. My client's wife has passed on, he has no children. It is admitted that he has provided generously for his sisters and their children in times past, and that he has established annuities for such near kin as are without means of support.

"But now like vultures, worse than vultures, for they are not content to let him die in peace, they would prevent my client from enjoying his wealth in whatever manner best suits him for the few remaining years of his life. It is true that he has sold his holdings; is it strange that an elderly man should wish to retire? It is true that he suffered some paper losses in liquidation. 'The value of a thing is what that thing will bring.' He was retiring and demanded cash. Is there anything strange about that?

"It is admitted that he refused to discuss his actions with his so-loving kinfolk. What law, or principle, requires a man to consult with his nephews on anything?

"Therefore, we pray that this court will confirm my client in his right to do what he likes with his own, deny this petition, and send these meddlers about their business."

The judge took off his spectacles .and polished them thoughtfully.

"Mr. Kamens, this court has as high a regard for individual liberty as you have, and you may rest assured that any action taken will be solely in the interests of your client. Nevertheless, men do grow old, men do become senile, and in such cases must be protected.

"I shall take this matter under advisement until tomorrow. Court is adjourned."

From the Kansas City Star:

"ECCENTRIC MILLIONAIRE DISAPPEARS"

"--failed to appear for the adjourned hearing. The bailiffs returned from a search of places usually frequented by Harriman with the report that he had not been seen since the previous day. A bench warrant under contempt proceedings has been issued and--"

A desert sunset is a better stimulant for the appetite than a hot dance orchestra. Charlie testified to this by polishing the last of the ham gravy with a piece of bread. Harriman handed each of the younger men cigars and took one himself.

"My doctor claims that these weeds are bad for my heart condition," he remarked as he lighted it, "but I've felt so much better since I joined you boys here on the ranch that I am inclined to doubt him." He exhaled a cloud of blue-grey smoke and resumed. "I don't think a man's health depends so much on what he does as on whether he wants to do it. I'm doing what I want to do."

"That's all a man can ask of life," agreed McIntyre.

"How does the work look now, boys?"

"My end's in pretty good shape," Charlie answered. "We finished the second pressure tests on the new tanks and the fuel lines today. The ground tests are all done, except the calibration runs. Those won't take long -- just the four hours to make the runs if I don't run into some bugs. How about you, Mac?"

McIntyre ticked them off on his fingers. "Food supplies and water on

board. Three vacuum suits, a spare, and service kits. Medical supplies. The buggy already had all the standard equipment for strato flight. The late lunar ephemerides haven't arrived as yet."

"When do you expect them?"

"Any time -- they should be here now. Not that it matters. This guff about how hard it is to navigate from here to the Moon is hokum to impress the public. After all you can see your destination -- it's not like ocean navigation. Gimme a sextant and a good radar and I'll set you down any place on the Moon you like, without cracking an almanac or a star table, just from a general knowledge of the relative speeds involved."

"Never mind the personal buildup, Columbus," Charlie told him, "we'll admit you can hit the floor with your hat. The general idea is, you're ready to go now. Is that right?"

"That's it."

"That being the case, I could run those tests tonight. I'm getting jumpy -- things have been going too smoothly. If you'll give me a hand, we ought to be in bed by midnight."

"O.K., when I finish this cigar."

They smoked in silence for a while, each thinking about the coming trip and what it meant to him. Old Harriman tried to repress the excitement that possessed him at the prospect of immediate realization of his life-long dream.

"Mr. Harriman--"

"Eh? What is it, Charlie?"

"How does a guy go about getting rich, like you did?"

"Getting rich? I can't say; I never tried to get rich. I never wanted to be rich, or well known, or anything like that."

"Huh?"

"No, I just wanted to live a long time and see it all happen. I wasn't unusual; there were lots of boys like me -- radio hams, they were, and telescope builders, and airplane amateurs. We had science clubs, and basement laboratories, and science-fiction leagues -- the kind of boys

who thought there was more romance in one issue of the _Electrical Experimenter_ than in all the books Dumas ever wrote. We didn't want to be one of Horatio Alger's Get-Rich heroes either, we wanted to build space ships. Well, some of us did."

"Jeez, Pop, you make it sound exciting."

"It was exciting, Charlie. This has been a wonderful, romantic century, for all of its bad points. And it's grown more wonderful and more exciting every year. No, I didn't want to be rich; I just wanted to live long enough to see men rise up to the stars, and, if God was good to me, to go as far as the Moon myself." He carefully deposited an inch of white ash in a saucer. "It has been a good life. I haven't any complaints."

McIntyre pushed back his chair. "Come on, Charlie, if you're ready."

They all got up. Harriman started to speak, then grabbed at his chest, his face a dead grey-white. "Catch him, Mac!"

"Where's his medicine?"

"In his vest pocket."

They eased him over to a couch, broke a small glass capsule in a handkerchisf, and held it under his nose. The volatile released by the capsule seemed to bring a little color into his face. They did what little they could for him, then waited for him to regain consciousness.

Charlie broke the uneasy silence. "Mac, we ain't going through with this."

"Why not?"

"It's murder. He'll never stand up under the initial acceleration."

"Maybe not, but it's what he wants to do. You heard him."

"But we oughtn't to let him."

"Why not? It's neither your business, nor the business of this damn paternalistic government, to tell a man not to risk his life doing what he really wants to do."

"All the same, I don't feel right about it. He's such a swell old duck."

"Then what d'yuh want to do with him -- send him back to Kansas City

so those old harpies can shut him up in a laughing academy till he dies of a broken heart?"

"N-no-o-o -- not that."

"Get out there, and make your set-up for those test runs. I'll be along."

A wide-tired desert runabout rolled in the ranch yard gate the next morning and stopped in front of the house. A heavy-set man with a firm, but kindly, face climbed out and spoke to McIntyre, who approached to meet him.

"You James Mcintyre?"

"What about it?"

"I'm the deputy federal marshal hereabouts. I got a warrant for your arrest."

"What's the charge?"

"Conspiracy to violate the Space Precautionary Act."

Charlie joined the pair. "What's up, Mac?"

The deputy answered. "You'd be Charles Cummings, I guess. Warrant here for you. Got one for a man named Harriman, too, and a court order to put seals on your space ship."

"We've no space ship."

"What d'yuh keep in that big shed?"

"Strato yacht."

"So? Well, I'll put seals on her until a space ship comes along. Where's Harriman?"

"Right in there." Charlie obliged by pointing, ignoring McIntyre's scowl.

The deputy turned his head. Charlie couldn't have missed the button by a fraction of an inch for the deputy collapsed quietly to the ground. Charlie stood over him, rubbing his knuckles and mourning.

"Damn it to hell -- that's the finger I broke playing shortstop. I'm always hurting that finger."

"Get Pop into the cabin," Mac cut him short, "and strap him into his hammock."

"Aye aye, Skipper."

They dragged the ship by tractor out of the hangar, turned, and went out the desert plain to find elbow room for the take-off. They climbed in. McIntyre saw the deputy from his starboard conning port. He was staring disconsolately after them.

Mcintyre fastened his safety belt, settled his corset, and spoke into the engineroom speaking tube. "All set, Charlie?"

"All set, Skipper. But you can't raise ship yet, Mac -- _She ain't named! _"

"No time for your superstitions!"

Harriman's thin voice reached them. "Call her the _Lunatic_ -- It's the only appropriate name!"

McIntyre settled his head into the pads, punched two keys, then three more in rapid succession, and the _Lunatic_ raised ground.

"How are you, Pop?"

Charlie searched the old man's face anxiously. Harriman licked his lips and managed to speak. "Doing fine, son. Couldn't be better."

"The acceleration is over; it won't be so bad from here on. I'll unstrap you so you can wiggle around a little. But I think you'd better stay in the hammock." He tugged at buckles. Harriman partially repressed a groan.

"What is it, Pop?"

"Nothing. Nothing at all. Just go easy on that side."

Charlie ran his fingers over the old man's side with the sure, delicate touch of a mechanic. "You ain't foolin' me none, Pop. But there isn't much I can do until we ground."

"Charlie--"

"Yes, Pop?"

"Can't I move to a port? I want to watch the Earth."

"Ain't nothin' to see yet; the ship hides it. As soon as we turn ship, I'll move you. Tell you what; I'll give you a sleepy pill, and then wake you when we do."

"No!"

"Huh?"

"I'll stay awake."

"Just as you say, Pop."

Charlie clambered monkey fashion to the nose of the ship, and anchored to the gymbals of the pilot's chair. McIntyre questioned him with his eyes.

"Yeah, he's alive all right," Charlie told him, "but he's in bad shape."

"How bad?"

"Couple of cracked ribs anyhow. I don't know what else. I don't know whether he'll last out the trip, Mac. His heart was pounding something awful."

"He'll last, Charlie. He's tough."

"Tough? He's delicate as a canary."

"I don't mean that. He's tough way down inside where it counts."

"Just the same you'd better set her down awful easy if you want to ground with a full complement aboard."

"I will. I'll make one full swing around the Moon and ease her in on an involute approach curve. We've got enough fuel, I think."

They were now in a free orbit; after McIntyre turned ship, Charlie went back, unslung the hammock, and moved Harriman, hammock and all, to a side port. Mcliityre steadied the ship about a transverse axis so that the tail pointed toward the sun, then gave a short blast on two tangential jets opposed in couple to cause the ship to spin slowly about her longitudinal axis, and thereby create a slight artificial gravity. The initial weightlessness when coasting commenced had knotted the old man with the characteristic nausea of free flight, and the pilot wished to save his passenger as much discomfort as possible.

But Harriman was not concerned with the condition of his stomach.

There it was, all as he had imagined it so many times.

The Moon swung majestically past the view port, wider than he had ever seen it before, all of her familiar features cameo clear. She gave way to the Earth as the ship continued its slow swing, the Earth itself as he had envisioned her, appearing like a noble moon, many times as wide as the Moon appears to the Earthbound, and more luscious, more sensuously beautiful than the silver Moon could be. It was sunset near the Atlantic seaboard -- the line of shadow cut down the coast line of North America, slashed through Cuba, and obscured all but the west coast of South America. He savored the mellow blue of the Pacific Ocean, felt the texture of the soft green and brown of the continents, admired the blue-white cold of the polar caps. Canada and the northern states were obscured by cloud, a vast low pressure area that spread across the continent. It shone with an even more satisfactory dazzling white than the polar caps.

As the ship swung slowly, around, Earth would pass from view, and the stars would march across the port the same stars he had always known, but steady, brighter, and unwinking against a screen of perfect, live black. Then the Moon would swim into view again to claim his thoughts.

He was serenely happy in a fashion not given to most men, even in a long lifetime. He felt as if he were every man who has ever lived, looked up at the stars, and longed.

As the long hours came and went he watched and dozed and dreamed. At least once he must have fallen into deep sleep, or possibly delirium, for he came to with a start, thinking that his wife, Charlotte, was calling to him. "Delos!" the voice had said. "Delos! Come in from there! You'll catch your death of cold in that night air."

Poor Charlotte! She had been a good wife to him, a good wife. He was quite sure that her only regret in dying had been her fear that he could not take proper care of himself. It had not been her fault that she had not shared his dream, and his need.

Charlie rigged the hammock in such a fashion that Harriman could watch from the starboard port when they swung around the far face of the Moon. He picked out the landmarks made familiar to him by a thousand photographs with nostalgic pleasure, as if he were returning to his own country. Mcintyre brought her slowly down as they came back around to the Earthward face, and prepared to land east of Mare Fecunditatis, about ten miles from Luna City.

It was not a bad landing, all things considered. He had to land without coaching from the ground, and he had no second pilot to watch the radar for him. In his anxiety to make it gentle he missed his destination by some thirty miles, but he did his cold-sober best. But at that it was bumpy. As they grounded and the pumice dust settled around them, Charlie came up to the control station.

"How's our passenger?" Mac demanded.

"I'll see, but I wouldn't make any bets. That landing stunk, Mac."

"Damn it, I did my best."

"I know you did, Skipper. Forget it."

But the passenger was alive and conscious although bleeding from the nose and with a pink foam on his lips. He was feebly trying to get himself out of his cocoon. They helped him, working together.

"Where are the vacuum suits?" was his first remark.

"Steady, Mr. Harriman. You can't go out there yet. We've got to give you some first aid."

"_Get me that suit!_ First aid can wait."

Silently they did as he ordered. His left leg was practically useless, and they had to help him through the lock, one on each side. But with his inconsiderable mass having a lunar weight of only twenty pounds, he was no burden.. They found a place some fifty yards from the ship where they could prop him up and let him look, a chunk of scoria supporting his head.

Mcintyre put his helmet against the old man's and spoke. "We'll leave you here to enjoy the view while we get ready for the trek into town. It's a forty-miler, pretty near, and we'll have to break out spare air bottles and rations and stuff. We'll be back soon."

Harriman nodded without answering, and squeezed their gauntlets with a grip that was surprisingly strong.

He sat very quietly, rubbing his hands against the soil of the Moon and sensing the curiously light pressure of his body against the ground. At long last there was peace in his heart. His hurts had ceased to pain him. He was where he had longed to be -- he had followed his need.

Over the western horizon hung the Earth at last quarter, a green-blue giant moon. Overhead the Sun shone down from a black and starry sky. And underneath the Moon, the soil of the Moon itself. He was on the Moon!

He lay back still while a bath of content flowed over him like a tide at flood, and soaked to his very marrow.

His attention strayed momentarily, and he thought once again that his name was called. Silly, he thought, I'm getting old -- my mind wanders.

Back in the cabin Charlie and Mac were rigging shoulder yokes on a stretcher. "There. That will do," Mac commented. "We'd better stir Pop out; we ought to be going."

"I'll get him," Charlie replied. "I'll just pick him up and carry him. He don't weigh nothing."

Charlie was gone longer than Mcintyre had expected him to be. He returned alone. Mac waited for him to close the lock, and swing back his helmet. "Trouble?"

"Never mind the stretcher, Skipper. We won't be needin' it.

"Yeah, I mean it," he continued. "Pop's done for. I did what was necessary."

Mcintyre bent down without a word and picked up the wide skis necessary to negotiate the powdery ash. Charlie followed his example. Then they swung the spare air bottles over their shoulders, and passed out through the lock.

They didn't bother to close the outer door of the lock behind them.

SEARCHLIGHT

'Will she hear you?'

'If she's on this face of the Moon. If she was able to get out of the ship. If her suit radio wasn't damaged. If she has it turned on. If she is alive. Since the ship is silent and no radar beacon has been spotted, it is unlikely that she or the pilot lived through it.'

'She's got to be found! Stand by, Space Station. Tycho Base, acknowledge.'

Reply lagged about three seconds, Washington to Moon and back. 'Lunar Base, Commanding General.'

'General, put every man on the Moon out searching for Betsy!'

Speed-of-light lag made the answer sound grudging. 'Sir, do you know how big the Moon is?'

~No matter! Betsy Barnes is there somewhere - so every man is to search until she is found. If she's dead, your precious pilot would be better off dead, too!'

'Sir, the Moon is almost fifteen million square miles. If I used every man I have, each would have over a thousand square miles to search. I gave Betsy my best pilot. I won't listen to threats against him when he can't answer back. Not from anyone, sir! I'm sick of being told what to do by people who don't know Lunar conditions. My advice - my official advice sir is to let Meridian Station try. Maybe they can Work a miracle.'

The answer rapped back, 'Very well, General! I'll speak to you later. Meridian Station! Report your plans.' Elizabeth Barnes, 'Blind Betsy', child genius of the piano, had been making a USO tour of the Moon. She 'wowed 'em' at Tycho Base, then lifted by jeep rocket for Farside Hardbase, to entertain our lonely missilemen behind the Moon. She should have been there in an hour. Her pilot was a safety pilot; such ships shuttled unpiloted between Tycho and Farside daily.

After lift-off her ship departed from its programming, was lost by Tycho's radars. It was.. . somewhere.

Not in space, else it would be radioing for help and its radar beacon would be seen by other ships, space stations, surface bases. It had crashed - or made emergency landing - somewhere on the vastness of Luna.

'Meridian Space Station, Director speaking - ' Lag was unnoticeable; radio bounce between Washington and the station only 22,300 miles up was only a quarter second. 'We've patched Earthside stations to blanket the Moon with our call. Another broadcast blankets the far side from Station Newton at the three-body stable position. Ships from Tycho are orbiting the Moon's rim - that band around the edge which is in radio shadow from us and from the Newton. If we hear-'

'Yes, yes! How about radar search?'

'Sir, a rocket on the surface looks to radar like a million other features the same size. Our one chance is to get them to answer . . . if they can. Ultrahigh-resolution radar might spot them in months - but suits worn in those little rockets carry only six hours air. We are praying they will hear and answer.'

'When they answer, you'll slap a radio direction finder on them. Eh?'

'No, sir.'

'In God's name, why not?'

'Sir, a direction finder is useless for this job. It would tell us only that the signal came from the Moon - which doesn't help.'

'Doctor, you're saying that you might hear Betsy - and not know where she is?'

'We're as blind as she is. We hope that she will be able to lead us to her. . . if she hears us.'

'How?'

'With a Laser. An intense, very tight beam of light. She'll hear it-'

'Hear a beam of light?'

'Yes, sir. We are jury-rigging to scan like radar - that won't show anything. But we are modulating it to give a carrier wave in radio frequency, then modulating that into audio frequency-and controlling that by a piano. If she hears us, we'll tell her to listen while we scan the Moon and run the scale on the piano -,

'All this while a little girl is dying?'

'Mister President - shut up!'

'Who was THAT?'

'I'm Betsy's father. They've patched me from Omaha. Please, Mr President, keep quiet and let them work. I want my daughter back.'

The President answered tightly, 'Yes, Mr Barnes. Go ahead, Director. Order anything you need.'

In Station Meridian the director wiped his face. 'Getting anything?'

'No. Boss, can't something be done about that Rio station? It's sitting right on the frequency!'

'We'll drop a brick on them. Or a bomb. Joe, tell the President'

'I heard, Director. They'll be silenced!'

'Sh! Quiet! Betsy - do you hear me?' The operator looked intent, made an adjustment.

From a speaker came a girl's light, sweet voice: ' - to hear somebody! Gee, I'm glad! Better come quick - the Major is hurt.'

The Director jumped to the microphone. 'Yes, Betsy, we'll hurry. You've got to help us. Do you know where you are?'

'Somewhere on the Moon, I guess. We bumped hard and I was going to kid him about it when the ship fell over. I got unstrapped and found Major Peters and he isn't moving. Not dead - I don't think so; his suits puffs out like mine and I hear something when I push my helmet against him. I just now managed to get the door open.' She added, 'This can't be Farside; it's supposed to be night there. I'm in sunshine, I'm sure. This suit is pretty hot.'

'Betsy, you must stay outside. You've got to be where you can see us.'

She chuckled. 'That's a good one. I see with my ears.'

Yes. You'll see us, with your ears. Listen, Betsy. We're going to scan the Moon with a beam of light. You'll hear it as a piano note. We've got the Moon split into the eighty-eight piano notes. When you hear one, yell, "Now!" Then tell us what note you heard. Can you do that?'

'Of course,' she said confidently, 'if the piano is in tune.'

'It is. All right, we're starting -' 'Now!'

'What note, Betsy?'

'E flat, the first octave above middle C.' 'This note, Betsy?'

'That's what I said.'

The Director called out, 'Where's that on the grid? In Mare Nubium? Tell the General!' He said to the microphone, 'We're finding you, Betsy honey! Now we scan just that part you're on.

We change setup. Want to talk to your Daddy meanwhile?'

'Gosh! Could I?'

'Yes indeed!'

Twenty minutes later he cut' in and heard: '- of course not, Daddy. Oh, a teensy bit scared when the ship fell. But people take care of me, always have.'

'Betsy?'

'Yes, sir?'

'Be ready to tell us again.'

'Now!' She added, 'That's a bullfrog G, three octaves down.'

'This note?'

'That's right.'

'Get that on the grid and tell the General to get his ships up! That cuts it to a square ten miles on a side! Now, Betsy - we know almost where you are. We are going to focus still closer. Want to go inside and cool off?'

'I'm not too hot. Just sweaty.'

Forty minutes later the General's voice rang out: 'They've spotted the ship! They see her waving!'

SPACE JOCKEY

JUST AS THEY WERE LEAVING the telephone called his name. "Don't answer it," she pleaded. "We'll miss the curtain."

"Who is it?" he called out. The viewplate lighted; he recognized Olga Pierce, and behind her the Colorado Springs office of Trans-Lunar Transit.

"Calling Mr. Pemberton. Calling-Oh, it's you, Jake. You're on. Flight 27, Supra-New York to Space Terminal. I'll have a copter pick you up in twenty minutes."

"How come?" he protested. "I'm fourth down on the call board."

"You were fourth down. Now you are standby pilot to Hicks-and he just got a psycho down-check."

"Hicks got psychoed? That's silly!"

"Happens to the best, chum. Be ready. "Bye now."

His wife was twisting sixteen dollars worth of lace handkerchief to a shapeless mass. "Jake, this is ridiculous. For three months I haven't seen enough of you to know what you look like."

"Sorry, kid. Take Helen to the show."

"Oh, Jake, I don't care about the show; I wanted to get you where they couldn't reach you for once."

"They would have called me at the theater."

"Oh, no! I wiped out the record you'd left."

"Phyllis! Are you trying to get me fired?"

"Don't look at me that way." She waited, hoping that he would speak, regretting the side issue, and wondering how to tell him that her own fretfulness was caused, not by disappointment, but by gnawing worry for his safety every time he went out into space.

She went on desperately, "You don't have to take this flight, darling; you've been on Earth less than the time limit. Please, Jake!"

He was peeling off his tux. "I've told you a thousand times: a pilot doesn't get a regular run by playing space-lawyer with the rule book. Wiping out my follow-up message-why did you do it, Phyllis? Trying to ground me?"

"No, darling, but I thought just this once-"

"When they offer me a flight I take it." He walked stiffly out of the room.

He came back ten minutes later, dressed for space and apparently in good humor; he was whistling: "-the caller called Casey at half past four; he kissed his-" He broke off when he saw her face, and set his mouth. "Where's my coverall?"

"I'll get it. Let me fix you something to eat."

'You know I can't take high acceleration on a full stomach. And why lose thirty bucks to lift another pound?"

Dressed as he was, in shorts, singlet, sandals, and pocket belt, he was already good for about minus-fifty pounds in weight bonus; she started to tell him the weight penalty on a sandwich and -a cup of coffee did not matter to them, but it was just one more possible cause for misunderstanding.

Neither of them said much until the taxicab clumped on the roof. He kissed her goodbye and told her not to come outside. She obeyed-until she heard the helicopter take off. Then she climbed to the roof and watched it out of sight.

The traveling-public gripes at the lack of direct Earth-to-Moon service, but it takes three types of rocket ships and two space-station changes to make a fiddling quarter-million-mile jump for a good reason: Money.

The Commerce Commission has set the charges for the present three-stage lift from here to the Moon at thirty dollars a pound. Would direct service be cheaper? A ship designed to blast off from Earth, make an airless landing on the Moon, return and make an atmosphere landing, would be so cluttered up with heavy special equipment used only once in the trip that it could not show a profit at a thousand dollars a pound! Imagine combining a ferry boat, a subway train, and an express elevator. So Trans-Lunar uses rockets braced for catapulting, and winged for landing on return to Earth to make the terrific lift from Earth to our satellite station Supra-New York. The long middle lap, from there to where Space Terminal circles the Moon, calls for comfort-but no landing gear. The Flying Dutchman and the Philip Nolan never land; they were even assembled in space, and they resemble winged rockets like the Skysprite and the Firefly as little as a Pullman train resembles a parachute.

The Moonbat and the Gremlin are good only for the jump from Space Terminal down to Luna . . . no wings, cocoon-like acceleration-and-crash hammocks, fractional controls on their enormous jets.

The change-over points would not have to be more than air-conditioned tanks. Of course Space Terminal is quite a city, what with the Mars and Venus traffic, but even today Supra-New York is still rather primitive, hardly more than a fueling point and a restaurant-waiting room. It has only been the past five years that it has even been equipped to offer the comfort of one-gravity centrifuge service to

passengers with queasy stomachs.

Pemberton weighed in at the spaceport office, then hurried over to where the Skysprite stood cradled in the catapult. He shucked off his coverall, shivered as he handed it to the gateman, and ducked inside. He went to his acceleration hammock and went to sleep; the lift to Supra-New York was not his worry-his job was deep space.

He woke at the surge of the catapult and the nerve-tingling rush up the face of Pikes Peak. When the Skysprite went into free flight, flung straight up above the Peak, Pemberton held his breath; if the rocket jets failed to fire, the ground-to-space pilot must try to wrestle her into a glide and bring her down, on her wings.

The rockets roared on time; Jake went back to sleep.

When the Skysprite locked in with Supra-New York, Pemberton went to the station's stellar navigation room. He was pleased to find Shorty Weinstein, the computer, on duty. Jake trusted Shorty's computations-a good thing when your ship, your passengers, and your own skin depend thereon. Pemberton had to be a better than average mathematician himself in order to be a pilot; his own limited talent made him appreciate the genius of those who computed the orbits.

"Hot Pilot Pemberton, the Scourge of the Spaceways - Hi!" Weinstein handed him a sheet of paper.

Jake looked at it, then looked amazed. "Hey, Shorty- you've made a mistake."

"Huh? Impossible. Mabel can't make mistakes." Weinstein gestured at the giant astrogation computer filling the far wall.

"You made a mistake. You gave me an easy fix - 'Vega, Antares, Regulus.' You make things easy for the pilot and your guild'll chuck you out." Weinstein looked sheepish but pleased. "I see I don't blast off for seventeen hours. I could have taken the morning freight." Jake's thoughts went back to Phyllis.

"UN canceled the morning trip."

"Oh-" Jake shut up, for he knew Weinstein knew as little as he did. Perhaps the flight would have passed too close to an A-bomb rocket, circling the globe like a policeman. The General Staff of the Security Council did not give out information about the top secrets guarding the peace of the planet. Pemberton shrugged. "Well, if I'm asleep, call

me three hours minus."

"Right. Your tape will be ready."

While he slept, the Flying Dutchman nosed gently into her slip, sealed her airlocks to the Station, discharged passengers and freight from Luna City. When he woke, her holds were filling, her fuel replenished, and passengers boarding. He stopped by the post office radio desk, looking for a letter from Phyllis. Finding none, he told himself that she would have sent it to Terminal. He went on into the restaurant, bought the facsimile Herald-Tribune, and settled down grimly to enjoy the comics and his breakfast.

A man sat down opposite him and proceeded to plague him with silly questions about rocketry, topping it by misinterpreting the insignia embroidered on Pemberton's singlet and miscalling him "Captain." Jake hurried through breakfast to escape him, then picked up the tape from his automatic pilot, and went aboard the Flying Dutchman.

After reporting to the Captain he went to the control room, floating and pulling himself along by the handgrips. He buckled himself into the pilot's chair and started his check off.

Captain Kelly drifted in and took the other chair as Pemberton was finishing his checking runs on the ballistic tracker. "Have a Camel, Jake."

"I'll take a rain check." He continued. Kelly watched him with a slight frown. Like captains and pilots on Mark Twain's Mississippi-and for the same reasons-a spaceship captain bosses his ship, his crew, his cargo, and his passengers, but the pilot is the final, legal, and unquestioned boss of how the ship is handled from blast-off to the end of the trip. A captain may turn down a given pilot-nothing more. Kelly fingered a slip of paper tucked in his pouch and turned over in his mind the words with which the Company psychiatrist on duty had handed it to him.

"I'm giving this pilot clearance, Captain, but you need not accept it."

"Pemberton's a good man. What's wrong?"

The psychiatrist thought over what he had observed while posing as a silly tourist bothering a stranger at breakfast. "He's a little more anti-social than his past record shows. Something on his mind. Whatever it is, he can tolerate it for the present. We'll keep an eye on him."

Kelly had answered, "Will you come along with him as pilot?"

"If you wish."

"Don't bother-I'll take him. No need to lift a deadhead." Pemberton fed Weinstein's tape into the robot-pilot, then turned to Kelly. "Control ready, sir."

"Blast when ready, Pilot." Kelly felt relieved when he heard himself make the irrevocable decision.

Pemberton signaled the Station to cast loose. The great ship was nudged out by an expanding pneumatic ram until she swam in space a thousand feet away, secured by a single line. He then turned the ship to its blast-off direction by causing a flywheel, mounted on gimbals at the ship's center of gravity, to spin rapidly. The ship spun slowly in the opposite direction, by grace of Newton's Third Law of Motion.

Guided by the tape, the robot-pilot tilted prisms of the pilot's periscope so that Vega, Antares, and Regulus would shine as one image when the ship was headed right; Pemberton nursed the ship to that heading . . . fussily; a mistake of one minute of arc here meant two hundred miles at destination.

When the three images made a pinpoint, he stopped the flywheels and locked in the gyros. He then checked the heading of his ship by direct observation of each of the stars, just as a salt-water skipper uses a sextant, but with incomparably more accurate instruments. This told him nothing about the correctness of the course Weinstein had ordered-he had to take that as Gospel-but it assured him that the robot and its tape were behaving as planned. Satisfied, he cast off the last line.

Seven minutes to go-Pemberton flipped the switch permitting the robot-pilot to blast away when its clock told it to. He waited, hands poised over the manual controls, ready to take over if the robot failed, and felt the old, inescapable sick excitement building up inside him.

Even as adrenaline poured into him, stretching his time sense, throbbing in his ears, his mind kept turning back to Phyllis.

He admitted she had a kick coming-spacemen shouldn't marry. Not that she'd starve if he messed up a landing, but a gal doesn't want insurance; she wants a husband-minus six minutes. If he got a regular run she could live in Space Terminal.

No good-idle women at Space Terminal went bad. Oh, Phyllis wouldn't become a tramp or a rum bum; she'd just go bats.

Five minutes more-he didn't care much for Space Terminal himself. Nor for space! "The Romance of Interplanetary Travel" - it looked well in print, but he knew what it was: A job. Monotony. No scenery. Bursts of work, tedious waits. No home life.

Why didn't he get an honest job and stay home nights?

He knew! Because he was a space jockey and too old to change.

What chance has a thirty-year-old married man, used to important money, to change his racket? (Four minutes) He'd look good trying to sell helicopters on commission, now, wouldn't he?

Maybe he could buy a piece of irrigated land and - Be your age, chum! You know as much about farming as a cow knows about cube root! No, he had made his bed when he picked rockets during his training hitch. If he had bucked for the electronics branch, or taken a 01 scholarship-too late now. Straight from the service into Harriman's Lunar Exploitations, hopping ore on Luna. That had torn it.

"How's it going, Doc?" Kelly's voice was edgy.

"Minus two minutes some seconds." Damnation-Kelly knew better than to talk to the pilot on minus time.

He caught a last look through the periscope. Antares seemed to have drifted. He unclutched the gyro, tilted and spun the flywheel, braking it savagely to a stop a moment later. The image was again a pinpoint. He could not have explained what he did: it was virtuosity, exact juggling, beyond textbook and classroom.

Twenty seconds . . . across the chronometer's face beads of light trickled the seconds away while he tensed, ready to fire by hand, or even to disconnect and refuse the trip if his judgment told him to. A too-cautious decision might cause Lloyds' to cancel his bond; a reckless decision could cost his license or even his life-and others.

But he was not thinking of underwriters and licenses, nor even of lives. In truth he was not thinking at all; he was feeling, feeling his ship, as if his nerve ends extended into every part of her. Five seconds . . . the safety disconnects clicked out. Four seconds . . . three seconds. . . two seconds. . . one-

He was stabbing at the hand-fire button when the roar hit him.

Kelly relaxed to the pseudo-gravity of the blast and watched. Pemberton was soberly busy, scanning dials, noting time, checking his progress by radar bounced off Supra-New York. Weinstein's figures, robot-pilot, the ship itself, all were clicking together.

Minutes later, the critical instant neared when the robot should cut the jets. Pemberton poised a finger over the hand cut-off, while splitting his attention among radarscope, accelerometer, periscope, and chronometer. One instant they were roaring along on the jets; the next split second the ship was in free orbit, plunging silently toward the Moon. So perfectly matched were human and robot that Pemberton himself did not know which had cut the power.

He glanced again at the board, then unbuckled. "How about that cigarette, Captain? And you can let your passengers unstrap."

No co-pilot is needed in space and most pilots would rather share a toothbrush than a control room. The pilot works about an hour at blast off, about the same before contact, and loafs during free flight, save for routine checks and corrections. Pemberton prepared to spend one hundred and four hours eating, reading, writing letters, and sleeping-especially sleeping.

When the alarm woke him, he checked the ship's position, then wrote to his wife. "Phyllis my dear," he began, "I don't blame you for being upset at missing your night out. I was disappointed, too. But bear with me, darling, I should be on a regular run before long. In less than ten years I'll be up for retirement and we'll have a chance to catch up on bridge and golf and things like that. I know it's pretty hard to-"

The voice circuit cut in "Oh, Jake-put on your company face. I'm bringing a visitor to the control room."

"No visitors in the control room, Captain."

"Now, Jake. This lunkhead has a letter from Old Man Harriman himself. 'Every possible courtesy-' and so forth."

Pemberton thought quickly. He could refuse-but there was no sense in offending the big boss. "Okay, Captain. Make it short."

The visitor was a man, jovial, oversize-Jake figured him for an eighty pound weight penalty. Behind him a thirteen year-old male counterpart came zipping through the door and lunged for the control

console. Pemberton snagged him by the arm and forced himself to speak pleasantly. "Just hang on to that bracket, youngster. I don't want you to bump your head."

"Leggo me! Pop-make him let go."

Kelly cut in. "I think he had best hang on, Judge."

"Umm, uh-very well. Do as the Captain says, Junior."

"Aw, gee, Pop!"

"Judge Schacht, this is First Pilot Pemberton," Kelly said rapidly. "He'll show you around."

"Glad to know you, Pilot. Kind of you, and all that."

"What would you like to see, Judge?" Jake said carefully.

"Oh, this and that. It's for the boy-his first trip. I'm an old spacehound myself-probably more hours than half your crew." He laughed. Pemberton did not.

"There's not much to see in free flight."

"Quite all right. We'll just make ourselves at home-eh, Captain?"

"I wanna sit in the control seat," Schacht Junior announced.

Pemberton winced. Kelly said urgently, "Jake, would you mind outlining the control system for the boy? Then we'll go."

"He doesn't have to show me anything. I know all about it. I'm a Junior Rocketeer of America-see my button?" The boy shoved himself toward the control desk.

Pemberton grabbed him, steered him into the pilot's chair, and strapped him in. He then flipped the board's disconnect.

"Whatcha doing?"

"I cut off power to the controls so I could explain them."

"Aintcha gonna fire the jets?"

"No." Jake started a rapid description of the use and purpose of each button, dial, switch, meter, gimmick, and scope.

Junior squirmed. "How about meteors?" he demanded.

"Oh, that-maybe one collision in half a million EarthMoon trips. Meteors are scarce."

"So what? Say you hit the jackpot? You're in the soup."

"Not at all. The anti-collision radar guards all directions five hundred miles out. If anything holds a steady bearing for three seconds, a direct hook-up starts the jets. First a warning gong so that everybody can grab something solid, then one second later - Boom! - We get out of there fast."

"Sounds corny to me. Lookee, I'll show you how Commodore Cartwright did it in The Comet Busters-"

"Don't touch those controls!"

"You don't own this ship. My pop says-"

"Oh, Jake!" Hearing his name; Pemberton twisted, fish-like, to face Kelly.

"Jake, Judge Schacht would like to know-" From the corner of his eye Jake saw the boy reach for the board. He turned, started to shout-acceleration caught him, while the jets roared in his ear.

An old spacehand can usually recover, catlike, in an unexpected change from weightlessness to acceleration. But Jake had been grabbing for the boy, instead of for anchorage. He fell back and down, twisted to try to avoid Schacht, banged his head on the frame of the open air-tight door below, and fetched up on the next deck, out cold. - Kelly was shaking him. ".You all right, Jake?"

He sat up. "Yeah. Sure." He became aware of the thunder, the shivering deckplates. "The jets! Cut the power!"

He shoved Kelly aside and swarmed up into the control room, jabbed at the cut-off button. In sudden ringing silence, they were again weightless.

Jake turned, unstrapped Schacht Junior, and hustled him to Kelly. "Captain, please remove this menace from my control room."

"Leggo! Pop-he's gonna hurt me!"

The elder Schacht bristled at once. "What's the meaning of this? Let go

of my son!"

"Your precious son cut in the jets."

"Junior-did you do that?"

The boy shifted his eyes. "No, Pop. It . . . it was a meteor."

Schacht looked puzzled. Pemberton snorted. "I had just told him how the radar-guard can blast to miss a meteor. He's lying."

Schacht ran through the process he called "making up his mind", then answered, "Junior never lies. Shame on you, a grown man, to try to put the blame on a helpless boy. I shall report you, sir. Come, Junior."

Jake grabbed his arm. "Captain, I want those controls photographed for fingerprints before this man leaves the room. It was not a meteor; the controls were dead, until this boy switched them on. Furthermore the anti-collision circuit sounds an alarm."

Schacht looked wary. "This is ridiculous. I simply objected to the slur on my son's character. No harm has been done."

"No harm, eh? How about broken arms-or necks? And wasted fuel, with more to waste before we're back in the groove. Do you know, Mister 'Old Spacehound,' just how precious a little fuel will be when we try to match orbits with Space Terminal-if we haven't got it? We may have to dump cargo to save the ship, cargo at $60,000 a ton on freight charges alone. Fingerprints will show the Commerce Commission whom to nick for it."

When they were alone again Kelly asked anxiously, "You won't really have to jettison? You've got a maneuvering reserve."

"Maybe we can't even get to Terminal. How long did she blast?"

Kelly scratched his head. "I was woozy myself."

"We'll open the accelerograph and take a look."

Kelly brightened. "Oh, sure! If the brat didn't waste too much, then we just swing ship and blast back the same length of time."

Jake shook his head. "You forgot the changed mass-ratio."

"Oh ... oh, yes!" Kelly looked embarrassed. Mass-ratio under power, the ship lost the weight of fuel burned. The thrust remained constant;

the mass it pushed shrank. Getting back to proper position, course, and speed became a complicated problem in the calculus of ballistics. "But you can do it, can't you?"

"I'll have to. But I sure wish I had Weinstein here."

Kelly left to see about his passengers; Jake got to work. He checked his situation by astronomical observation and by radar. Radar gave him all three factors quickly but with limited accuracy. Sights taken of Sun, Moon, and Earth gave him position, but told nothing of course and speed, at that time-nor could he afford to wait to take a second group of sights for the purpose.

Dead reckoning gave him an estimated situation, by adding Weinstein's predictions to the calculated effect of young Schacht's meddling. This checked fairly well with the radar and visual observations, but still he had no notion of whether or not he could get back in the groove and reach his destination; it was now necessary to calculate what it would stake and whether or not the remaining fuel would be enough to brake his speed and match orbits.

In space, it does no good to reach your journey's end if you flash on past at miles per second, or even crawling along at a few hundred miles per hour. To catch an egg on a plate - don't bump!

He started doggedly to work to compute how to do it using the least fuel, but his little Marchant electronic calculator was no match for the tons of IBM computer at Supra-New York, nor was he Weinstein. Three hours later he had an answer of sorts. He called Kelly. "Captain? You can start by jettisoning Schacht & Son."

"I'd like to. No way out, Jake?"

"I can't promise to get your ship in safely without dumping. Better dump now, before we blast. It's cheaper."

Kelly hesitated; he would as cheerfully lose a leg. "Give me time to pick out what to dump."

"Okay." Pemberton returned sadly to his figures, hoping to find a saving mistake, then thought better of it. He called the radio room. "Get me Weinstein at Supra-New York."

"Out of normal range."

"I know that. This is the Pilot. Safety priority-urgent. Get a tight beam

on them and nurse it."

"Uh . . . aye aye, sir. I'll try."

Weinstein was doubtful. "Cripes, Jake, I can't pilot you."

"Dammit, you can work problems for me!"

"What good is seven-place accuracy with bum data?"

"Sure, sure. But you know what instruments I've got; you know about how well I can handle them. Get me a better answer."

"I'll try." Weinstein called back four hours later. "Jake? Here's the dope: You planned to blast back to match your predicted speed, then made side corrections for position. Orthodox but uneconomical. Instead I had Mabel solve for it as one maneuver."

"Good!"

"Not so fast. It saves fuel but not enough. You can't possibly get back in your old groove - and then match T without dumping."

Pemberton let it sink in, then said, "I'll tell Kelly."

"Wait a minute, Jake. Try this. Start from scratch."

"Huh?"

"Treat it as a brand-new problem. Forget about the orbit on your tape. With your present course, speed, and position compute the cheapest orbit to match with Terminal's. Pick it!, new groove."

Pemberton felt foolish. "I never thought of that."

"Of course not. With the ship's little one-lung calculator it'd take you three weeks to solve it. You set to record?"

"Sure."

"Here's your data." Weinstein started calling it off. When they had checked it, Jake said, "That'll get me there?"

"Maybe. If the data you gave me is up to your limit of accuracy; if you can follow instructions as exactly as a robot, if you can blast off and make contact so precisely that you don't need side corrections, then you might squeeze home. Maybe. Good luck, anyhow." The wavering

reception muffled their goodbyes.

Jake signaled Kelly. "Don't jettison, Captain. Have your passengers strap down. Stand by to blast. Minus fourteen minutes."

"Very well, Pilot."

The new departure made and checked, he again had time to spare. He took out his unfinished letter, read it, then tore it up.

"Dearest Phyllis," he started again, "I've been doing some hard thinking this trip and have decided that I've just been stubborn. What am I doing way out here? I like my home. I like to see my wife.

"Why should I risk my neck and your peace of mind to herd junk through the sky? Why hang around a telephone - waiting to chaperon fatheads to the Moon -numbskulls who couldn't pilot a rowboat and should have stayed at home in the first place?

"Money, of course. I've been afraid to risk a change. I won't find another job that will pay half as well, but, if you are game, I'll ground myself and we'll start over. All my love, "Jake"

He put it away and went to sleep, to dream that an entire troop of Junior Rocketeers had been quartered in his control room.

The closeup view of the Moon is second only to the spaceside view of the Earth as a tourist attraction; nevertheless Pemberton insisted that all passengers strap down during the swing around to Terminal. With precious little fuel for the matching maneuver, he refused to hobble his movements to please sightseers.

Around the bulge of the Moon, Terminal came into sight - by radar only, for the ship was tail foremost. After each short braking blast Pemberton caught a new radar fix, then compared his approach with a curve he had plotted from Weinstein's figures-with one eye on the time, another on the 'scope, a third on the plot, and a fourth on his fuel gages.

"Well, Jake?" Kelly fretted. "Do we make it?"

"How should I know? You be ready to dump." They had agreed on liquid oxygen as the cargo to dump, since it could be let boil out through the outer valves, without handling.

"Don't say it, Jake."

"Damn it-I won't if I don't have to." He was fingering his controls again; the blast chopped off his words. When it stopped, the radio maneuvering circuit was calling him.

"Flying Dutchman, Pilot speaking," Jake shouted back.

"Terminal Control-Supro reports you short on fuel."

"Right."

"Don't approach. Match speeds outside us. We'll send a transfer ship to refuel you and pick up passengers."

"I think I can make it."

"Don't try it. Wait for refueling."

"Quit telling me how to pilot my ship!" Pemberton switched off the circuit, then stared at the board, whistling morosely. Kelly filled in the words in his mind: "Casey said to the fireman, 'Boy, you better jump, cause two locomotives are agoing to bump!'"

"You going in the slip anyhow, Jake?"

"Mmm-no, blast it. I can't take a chance of caving in the side of Terminal, not with passengers aboard. But I'm not going to match speeds fifty miles outside and wait for a piggyback."

He aimed for a near miss just outside Terminal's orbit, conning by instinct, for Weinstein's figures meant nothing by now. His aim was good; he did not have to waste his hoarded fuel on last minute side corrections to keep from hitting Terminal. When at last he was sure of sliding safely on past if unchecked, he braked once more. Then, as he started to cut off the power, the jets coughed, sputtered, and quit.

The Flying Dutchman floated in space, five hundred yards outside Terminal, speeds matched.

Jake switched on the radio. "Terminal-stand by for my line. I'll warp her in."

He had filed his report, showered, and was headed for the post office to radiostat his letter, when the bullhorn summoned him to the Commodore-Pilot's office. Oh, oh, he told himself, Schacht has kicked the Brass-I wonder just how much stock that bliffy owns? And there's that other matter - getting snotty with Control.

He reported stiffly. "First Pilot Pemberton, sir."

Commodore Soames looked up. "Pemberton-oh, yes. You hold two ratings, space-to-space and airless-landing."

Let's not stall around, Jake told himself. Aloud he said, "I have no excuses for anything this last trip. If the Commodore does not approve the way I run my control room, he may have my resignation."

"What are you talking about?"

"I, well-don't you have a passenger complaint on me?"

"Oh, that!" Soames brushed it aside. "Yes, he's been here. But I have Kelly's report, too-and your chief jetman's, and a special from Supra-New York. That was crack piloting, Pemberton."

"You mean there's no beef from the Company"

"When have I failed to back up my pilots? You were perfectly right; I would have stuffed him out the air lock. Let's get down to business: You're on the space-to-space board, but I want to send a special to Luna City. Will you take it, as a favor to me?"

Pemberton hesitated; Soames went on, "That oxygen you saved is for the Cosmic Research Project. They blew the seals on the north tunnel and lost tons of the stuff. The work is stopped-about $130,000 a day in overhead, wages, and penalties. The Gremlin is here, but no pilot until the Moonbat gets in-except you. Well?"

"But I-look, Commodore, you can't risk people's necks on a jet landing of mine. I'm rusty; I need a refresher and a checkout."

"No passengers, no crew, no captain-your neck alone."

"I'll take her."

Twenty-eight minutes later, with the ugly, powerful hull of the Gremlin around him, he blasted away. One strong shove to kill her orbital speed and let her fall toward the Moon, then no more worries until it came time to "ride 'er down on her tail".

He felt good-until he hauled out two letters, the one he had failed to send, and one from Phyllis, delivered at Terminal.

The letter from Phyllis was affectionate-and superficial. She did not mention his sudden departure; she ignored his profession completely.

The letter was a model of correctness, but it worried him.

He tore up both letters and started another. It said, in part: "-never said so outright, but you resent my job.

"I have to work to support us. You've got a job, too. It's an old, old job that women have been doing a long time-crossing the plains in covered wagons, waiting for ships to come back from China, or waiting around a mine head after an explosion-kiss him goodbye with a smile, take care of him at home.

"You married a spaceman, so part of your job is to accept my job cheerfully. I think you can do it, when you realize it. I hope so, for the way things have been going won't do for either of us. Believe me, I love you. Jake"

He brooded on it until time to bend the ship down for his approach. From twenty miles altitude down to one mile he let the robot brake her, then shifted to manual while still falling slowly. A perfect airless-landing would be the reverse of the take-off of a war rocket-free fall, then one long blast of the jets, ending with the ship stopped dead as she touches the ground. In practice a pilot must feel his way down, not too slowly; a ship could burn all the fuel this side of Venus fighting gravity too long.

Forty seconds later, falling a little more than 140 miles per hour, he picked up in his periscopes the thousand-foot static towers. At 300 feet he blasted five gravities for more than a second, cut it, and caught her with a one-sixth gravity, Moon-normal blast. Slowly he eased this off, feeling happy.

The Gremlin hovered, her bright jet splashing the soil of the Moon, then settled with dignity to land without a jar.

The ground crew took over; a sealed runabout jeeped Pemberton to the tunnel entrance. Inside Luna City, he found himself paged before he finished filing his report. When he took the call, Soames smiled at him from the viewpl�. "I saw that landing from the field pick-up, Pemberton. You don't need a refresher course."

Jake blushed. "Thank you, sir."

"Unless you are dead set on space-to-space, I can use you on the regular Luna City run. Quarters here or Luna City? Want it?"

He heard himself saying, "Luna City. I'll take it."

He tore up his third letter as he walked into Luna City post office. At the telephone desk he spoke to a blonde in a blue moonsuit. "Get me Mrs. Jake Pemberton, Suburb six-four-oh-three, Dodge City, Kansas, please."

She looked him over. "You pilots sure spend money."

"Sometimes phone calls are cheap. Hurry it, will you?"

Phyllis was trying to phrase the letter she felt she should have written before. It was easier to say in writing that she was not complaining of loneliness nor lack of fun, but that she could not stand the strain of worrying about his safety. But then she found herself quite unable to state the logical conclusion. Was she prepared to face giving him up entirely if he would not give up space? She truly did not know . . . the phone call was a welcome interruption.

The viewplate stayed blank. "Long distance," came a thin voice. "Luna City calling."

Fear jerked at her heart. "Phyllis Pemberton speaking."

An interminable delay-she knew it took nearly three seconds for radio waves to make the Earth-Moon round trip, but she did not remember it and it would not have reassured her. All she could see was a broken home, herself a widow, and Jake, beloved Jake, dead in space. "Mrs. Jake Pemberton?"

"Yes, yes! Go ahead." Another wait-had she sent him away in a bad temper, reckless, his judgment affected? Had he died out there, remembering only that she fussed at him for leaving her to go to work? Had she failed him when he needed her? She knew that her Jake could not be tied to apron strings; men - grown-up men, not mammas' boys - had to break away from mother's apron strings. Then why had she tried to tie him to hers? She had known better; her own mother had warned her not to try it.

She prayed.

Then another voice, one that weakened her knees with relief: "That you, honey?"

"Yes, darling, yes! What are you doing on the Moon?"

"It's a long story. At a dollar a second it will keep. What I want to know is-are you willing to come to Luna City?"

It was Jake's turn to suffer from the inevitable lag in reply. He wondered if Phyllis were stalling, unable to make up her mind. At last he heard her say, "Of course, darling. When do I leave?"

"When-say, don't you even want to know why?"

She started to say that it did not matter, then said, "Yes, tell me." The lag was still present but neither of them cared. He told her the news, then added, "Run over to the Springs and get Olga Pierce to straighten out the red tape for you. Need my help to pack?"

She thought rapidly. Had he meant to come back anyhow, he would not have asked. "No. I can manage."

"Good girl. I'll radiostat you a long letter about what to bring and so forth. I love you. 'Bye now!"

"Oh, I love you, too. Goodbye, darling."

Pemberton came out of the booth whistling. Good girl, Phyllis. Staunch. He wondered why he had ever doubted her.

THE BLACK PITS OF LUNA

THE MORNING after we got to the Moon we went over to Rutherford. Dad and Mr. Latham - Mr. Latham is the man from the Harriman Trust that Dad came to Luna City to see.

Dad and Mr. Latham had to go anyhow, on business. I got Dad to promise I could go along because it looked like just about my only chance to get out on the surface of the Moon. Luna City is all right, I guess, but I defy you to tell a corridor in Luna City from the sublevels in New York-except that you're light on your feet, of course.

When Dad came into our hotel suite to say we were ready to leave, I was down on the floor, playing mumblety-peg with my kid brother. Mother was lying down and had asked me to keep the runt quiet. She had been dropsick all the way out from Earth and I guess she didn't feel very good. The runt had been fiddling with the lights, switching them from "dusk" to "desert suntan" and back again. I collared him and sat him down on the floor.

Of course, I don't play mumblety-peg any more, but, on the Moon, it's a right good game. The knife practically floats and you can do all kinds of things with it. We made up a lot of new rules.

Dad said, "Switch in plans, my dear. We're leaving for Rutherford right away. Let's pull ourselves together."

Mother said, "Oh, mercy me-I don't think I'm up to it. You and Dickie run along. Baby Darling and I will just spend a quiet day right here."

Baby Darling is the runt.

I could have told her it was the wrong approach. He nearly put my eye out with the knife and said, "Who? What? I'm going too. Let's go!"

Mother said, "Oh, now, Baby Darling-don't cause Mother Dear any trouble, We'll go to the movies, just you and I."

The runt is seven years younger than I am, but don't call him "Baby Darling" if you want to get anything out of him. He started to bawl. "You said I could go!" he yelled.

"No, Baby Darling. I haven't mentioned it to you. I-"

"Daddy said I could go!"

"Richard, did you tell Baby he could go?"

"Why, no, my dear, not that I recall. Perhaps I-"

The kid cut in fast. "You said I could go anywhere Dickie went. You promised me you promised me you promised me." Sometimes you have to hand it to the runt; he had them jawing about who told him what in nothing flat. Anyhow, that is how twenty minutes later, the four of us were up at the rocket port with Mr. Lathani and climbing into the shuttle for Rutherford.

The trip only takes about ten minutes and you don't see much, just a glimpse of the Earth while the rocket is still near Luna City and then not even that, since the atom plants where we were going are all on the back side of the Moon, of course. There were maybe a dozen tourists along and most of them were dropsick as soon as we went into free flight. So was Mother. Some people never will get used to rockets.

But Mother was all right as soon as we grounded and were inside again. Rutherford isn't like Luna City; instead of extending a tube out to the ship, they send a pressurized car out to latch on to the airlock of the rocket, then you jeep back about a mile to the entrance to underground. I liked that and so did the runt. Dad had to go off on business with Mr. Latham, leaving Mother and me and the runt to join

up with the party of tourists for the trip through the laboratories.

It was all right but nothing to get excited about. So far as I can see, one atomics plant looks about like another; Rutherford could just as well have been. the main plant outside Chicago. I mean to say everything that is anything is out of sight, covered up, shielded. All you get to see are some dials and instrument boards and people watching them. Remote control stuff, like Oak Ridge. The guide tells you about the experiments going on and they show you some movies - that's all.

I liked our guide. He looked like Tom Jeremy in The Space Troopers. I asked him if he was a spaceman and he looked at me kind of funny and said, no, that he was just a Colonial Services ranger. Then he asked me where I went to school and if I belonged to the Scouts. He said he was scoutmaster of Troop One, Rutherford City, Moonbat Patrol.

I found out there was just the one patrol-not many scouts on the Moon, I suppose.

Dad and Mr. Latham joined us just as we finished the tour while Mr. Perrin - that's our guide - was announcing the trip outside. "The conducted tour of Rutherford," he said, talking as if it were a transcription, "includes a trip by spacesuit out on the surface of the Moon, without extra charge, to see the Devil's Graveyard and the site of the Great Disaster of 1984. The trip is optional. There is nothing particularly dangerous about it and we've never had any one hurt, but the Commission requires that you sign a separate release for your own safety if you choose to make this trip. The trip takes about one hour. Those preferring to remain behind will find movies and refreshments in the coffee shop."

Dad was rubbing his hands together. "This is for me," he announced. "Mr. Latham, I'm glad we got back in time. I wouldn't have missed this for the world."

"You'll enjoy it," Mr. Latham agreed, "and so will you, Mrs. Logan. I'm tempted to come along myself."

"Why don't you?' Dad asked.

"No, I want to have the papers ready for you and the Director to sign when you get back and before you leave for Luna City."

"Why knock yourself out?" Dad urged him. "If a man's word is no

good, his signed contract is no better. You can mail the stuff to me at New York."

Mr. Latham shook his head. "No, really - I've been out on the surface dozens of times. But I'll come along and help you into your spacesuits."

Mother said, "Oh dear," she didn't think she'd better go; she wasn't sure she could stand the thought of being shut up in a spacesuit and besides glaring sunlight always gave her a headache.

Dad said, "Don't be silly, my dear; it's the chance of a lifetime," and Mr. Latham told her that the filters on the helmets kept the light from being glaring. Mother always objects and then gives in. I suppose women just don't have any force of character. Like the night before - earth-night, I mean, Luna City time - she had bought a fancy moonsuit to wear to dinner in the Earth-View room at the hotel, then she got cold feet. She complained to Dad that she was too plump to dare to dress like that.

Well, she did show an awful lot of skin. Dad said, "Nonsense, my dear. You look ravishing." So she wore it and had a swell time, especially when a pilot tried to pick her up.

It was like that this time. She came along. We went into the outfitting room and I looked around while Mr. Perrin was getting them all herded in and having the releases signed. There was the door to the airlock to the surface at the far end, with a bull's-eye window in it and another one like it in the door beyond. You could peek through and see the surface of the Moon beyond, looking hot and bright and sort of improbable, in spite of the amber glass in the windows. And there was a double row of spacesuits hanging up, looking like empty men. I snooped around until Mr. Perrin got around to our party.

"We can arrange to leave the youngster in the care of the hostess in the coffee shop," he was telling Mother. He reached down and tousled the runt's hair. The runt tried to bite him and he snatched his hand away in a hurry.

"Thank you, Mr. Perkins," Mother said, "I suppose that's best-though perhaps I had better stay behind with him."

"'Perrin' is the name," Mr. Perrin said mildly. "It won't be necessary. The hostess will take good care of him."

Why do adults talk in front of kids as if they couldn't understand English? They should have just shoved him into the coffee shop. By now the runt knew he was being railroaded. He looked around belligerently. "I go, too," he said loudly. "You promised me."

"Now Baby Darling," Mother tried to stop him. "Mother Dear didn't tell you-" But she was just whistling to herself; the runt turned on the sound effects.

"You said I could go where Dickie went; you promised me when I was sick. You promised me you promised me-" and on and on, his voice getting higher and louder all the time.

Mr. Perrin looked embarrassed. Mother said, "Richard, you'll just have to deal with your child. After all, you were the one who promised him."

"Me, dear?" Dad looked surprised. "Anyway, I don't see anything so complicated about it. Suppose we did promise him that he could do what Dickie does-we'll simply take him along; that's all."

Mr. Perrin cleared his throat. "I'm afraid not. I can outfit your older son with a woman's suit; he's tall for his age. But we just don't make any provision for small children."

Well, we were all tangled up in a mess in no time at all. The runt can always get Mother to go running in circles. Mother has the same effect on Dad. He gets red in the face and starts laying down the law to me. It's sort of a chain reaction, with me on the end and nobody to pass it along to. They came out with a very simple solution - I was to stay behind and take care of Baby Darling brat!

"But, Dad, you said-" I started in.

"Never mind!" he cut in. "I won't have this family disrupted in a public squabble. You heard what your mother said."

I was desperate. "Look, Dad," I said, keeping my voice low, "if I go back to Earth without once having put on a spacesuit and set foot on the surface, you'll just have to find another school to send me to. I won't go back to Lawrenceville; I'd be the joke of the whole place."

"We'll settle that when we get home."

"But, Dad, you promised me specifically-"

"That'll be enough out of you, young man. The matter is closed."

Mr. Lathain had been standing near by, taking it in but keeping his mouth shut. At this point he cocked an eyebrow at Dad and said very quietly, "Well, R.J., I thought your word was your bond?"

I wasn't supposed to hear it and nobody else did - a good thing, too, for it doesn't do to let Dad know that you know that he's wrong; it just makes him worse. I changed the subject in a hurry. "Look, Dad, maybe we all can go out. How about that suit over there?" I pointed at a rack that was inside a railing with a locked gate on it. The rack had a couple of dozen suits on it and at the far end, almost out of sight, was a small suit - the boots on it hardly came down to the waist of the suit next to it.

"Huh?" Dad brightened up. "Why, just the thing! Mr. Perrin! Oh, Mr. Perrin-here a minute! I thought you didn't have any small suits, but here's one that I think will fit."

Dad was fiddling at the latch of the railing gate. Mr. Perrin stopped him. "We can't use that suit, sir."

"Uh? Why not?"

"All the suits inside the railing are private property, not for rent."

"What? Nonsense-Rutherford is a public enterprise. I want that suit for my child."

"Well, you can't have it."

"I'll speak to the Director."

"I'm afraid you'll have to. That suit was specially built for his daughter."

And that's just what they did. Mr. Latham got the Director on the line, Dad talked to him, then the Director talked to Mr. Perrin, then he talked to Dad again. The Director didn't mind lending the suit, not to Dad, anyway, but he wouldn't order Mr. Perrin to take a below-age child outside.

Mr. Perrin was feeling stubborn and I don't blame him, but Dad soothed his feathers down and presently we were all climbing into our suits and getting pressure checks and checking our oxygen supply and switching on our walkie-talkies. Mr. Perrin was calling the roll by radio and reminding us that we were all on the same circuit, so we had better let him do most of the talking and not to make casual remarks or none of us would be able to hear. Then we were in the airlock and he was warning us to stick close together and not try to see how fast we could run or how high we could jump. My heart was rocking around in my chest.

The outer door of the lock opened and we filed out on the face of the Moon. It was just as wonderful as I dreamed it would be, I guess, but I was so excited that I hardly knew it at the time. The glare of the sun was the brightest thing I ever saw and the shadows so inky black you could hardly see into them. You couldn't hear anything but voices over your radio and you could reach down and switch off that.

The pumice was soft and kicked up around our feet like smoke, settling slowly, falling in slow motion. Nothing else moved. It was the deadest place you can imagine.

We stayed on a path, keeping close together for company, except twice when I had to take out after the runt when he found out he could jump twenty feet. I wanted to smack him, but did you ever try to smack anybody wearing a spacesuit? It's no use.

Mr. Perrin told us to halt presently and started his talk. "You are now in the Devil's Graveyard. The twin spires behind you are five thousand feet above the floor of the plain and have never been scaled. The spires, or monuments, have been named for apocryphal or mythological characters because of the fancied resemblance of this fantastic scene to a giant cemetery. Beelzebub, Thor, Siva, Cain, Set-" He pointed around us. "Lunologists are not agreed as to the origin of the strange shapes. Some claim to see indications of the action of air and water as well as volcanic action. If so, these spires must have been standing for an unthinkably long period, for today, as you see, the Moon-" It was the same sort of stuff you can read any month in Spaceways Magazine, only we were seeing it and that makes a

difference, let me tell you.

The spires reminded me a bit of the rocks below the lodge in the Garden of the Gods in Colorado Springs when we went there last summer, only these spires were lots bigger and, instead of blue sky, there was just blackness and hard, sharp stars overhead. Spooky.

Another ranger bad come with us, with a camera. Mr. Perrin tried to say something else, but the runt had started yapping away and I had to switch off his radio before anybody could hear anything. I kept it switched off until Mr. Perrin finished talking.

He wanted us to line up for a picture with the spires and the black sky behind us for a background. "Push your faces forward in your helmets so that your features will show. Everybody look pretty. There!" he added as the other guy snapped the shot. "Prints will be ready when you return, at ten dollars a copy."

I thought it over. I certainly needed one for my room at school and I wanted one to give to - anyhow, I needed another one. I had eighteen bucks left from my birthday money; I could sweet-talk Mother for the balance. So I ordered two of them.

We climbed a long rise and suddenly we were staring out across the crater, the disaster crater, all that was left of the first laboratory. It stretched away from us, twenty miles across, with the floor covered with shiny, bubbly green glass instead of pumice. There was a monument. I read it:

HERE ABOUT YOU ARE THE MORTAL REMAINS OF

Kurt Schaeffer

Maurice Feinstein

Thomas Dooley

Hazel Hayakawa

Cl. Washington Slappey

Sam Houston Adams

WHO DIED FOR THE TRUTH THAT MAKES MEN FREE

On the Eleventh Day of August 1984

I felt sort of funny and backed away and went to listen to Mr. Perrin. Dad and some of the other men were asking him questions. "They don't know exactly," he was saying. "Nothing was left. Now we telemeter all the data back to Luna City, as it comes off the instruments, but that was before the line-of-sight relays were set up."

"What would have happened," some man asked, "if this blast had gone off on Earth?"

"I'd hate to try to tell you-but that's why they put the lab here, back of the Moon." He glanced at his watch. "Time to leave, everybody." They were milling around, heading back down toward the path, when Mother screamed.

"Baby! Where's Baby Darling?"

I was startled but I wasn't scared, not yet. The runt is always running around, first here and then there, but he doesn't go far away, because he always wants to have somebody to yap to.

My father had one arm around Mother; he signaled to me with the other. "Dick," he snapped, his voice sharp in my earphones, "what have you done with your brother?'

"Me?" I said. "Don't look at me-the last I saw Mother had him by the hand, walking up the hill here."

"Don't stall around, Dick. Mother sat down to rest when we got here and sent him to you."

"Well, if she did, he never showed up." At that, Mother started to scream in earnest. Everybody had been listening, of course-they had to; there was just the one radio circuit. Mr. Perrin stepped up and switched off Mother's talkie, making a sudden silence.

"Take care of your wife, Mr. Logan," he ordered, then added, "When did you see your child last?"

Dad couldn't help him any; when they tried switching Mother back into the hook-up, they switched her right off again. She couldn't help and she deafened us. Mr. Perrin addressed the rest of us. "Has anyone seen the small child we had with us? Don't answer unless you have something to contribute. Did anyone see him wander away?"

Nobody had. I figured he probably ducked out when everybody was looking at the crater and had their backs to him. I told Mr. Perrin so.

"Seems likely," he agreed. "Attention, everybody! I'm going to search for the child. Stay right where you are. Don't move away from this spot. I won't be gone more than ten minutes."

"Why don't we all go?" somebody wanted to know.

"Because," said Mr. Perrin, "right now I've - only got one lost. I don't want to make it a dozen." Then he left, taking big easy lopes that covered fifty feet at a step.

Dad started to take out after him, then thought better of it, for Mother suddenly keeled over, collapsing at the knees and floating gently to the ground. Everybody started talking at once. Some idiot wanted to take her helmet off, but Dad isn't crazy. I switched off my radio so I could hear myself think and started looking around, not leaving the crowd but standing up on the lip of the crater and trying to see as much as I could.

I was looking back the way we had come; there was no sense in looking at the crater-if he had been in there he would have shown up like a fly on a plate.

Outside the crater was different; you could have hidden a regiment within a block of us, rocks standing up every which way, boulders big as houses with blow holes all through them, spires, gulleys-it was a mess. I could see Mr. Perrin every now and then, casting around like a dog after a rabbit, and making plenty of time. He was practically flying. When he came to a big boulder he would jump right over it, leveling off face down at the top of his jump, so he could see better.

Then he was heading back toward us and I switched my radio back on. There was still a lot of talk. Somebody was saying, "We've got to find him before sundown," and somebody else answered, "Don't be silly; the sun won't be down for a week. It's his air supply, I tell you. These suits are only good for four hours." The first voice said, "Oh!" then added softly, "like a fish out of water-" It was then I got scared.

A woman's voice, sounding kind of choked, said, "The poor, poor darling! We've got to find him before he suffocates," and my father's voice cut in sharply, "Shut up talking that way!" I could hear somebody sobbing. It might have been Mother.

Mr. Perrin was almost up to us and he cut in, "Silence everybody! I've got to call the base," and he added urgently, "Perrin, calling airlock control; Perrin, calling airlock control!"

A woman's voice answered, "Come in, Perrin." He told her what was wrong and added, "Send out Smythe to take this party back in. I'm staying. I want every ranger who's around and get me volunteers from among any of the experienced Moon hands. Send out a radio direction-finder by the first ones to leave."

We didn't wait long, for they came swarming toward us like grasshoppers. They must have been running forty or fifty miles an hour. It would have been something to see, if I hadn't been so sick at my stomach.

Dad put up an argument about going back, but Mr. Perrin shut him up. "If you hadn't been so confounded set on having your own way, we wouldn't be in a mess. If you had kept track of your kid, he wouldn't be lost. I've got kids of my own; I don't let 'em go out on the face of the Moon when they're too young to take care of themselves. You go on back - I can't be burdened by taking care of you, too."

I think Dad might even have gotten in a fight with him if Mother hadn't gotten faint again. We went on back with the party.

The next couple of hours were pretty awful. They let us sit just outside the control room where we could hear Mr. Perrin directing the search, over the loudspeaker. I thought at first that they would snag the runt as soon as they started using the radio direction-finder-pick up his power hum, maybe, even if he didn't say anything-but no such luck; they didn't get anything with it. And the searchers didn't find anything either.

A thing that made it worse was that Mother and Dad didn't even try to blame me. Mother was crying quietly and Dad was consoling her, when he looked over at me with an odd expression. I guess he didn't really see me at all, but I thought he was thinking that if I hadn't insisted on going out on the surface this wouldn't have happened. I said, "Don't go looking at me, Dad. Nobody told me to keep an eye on him. I thought he was with Mother."

Dad just shook his head without answering. He was looking tired and sort of shrunk up. But Mother, instead of laying in to me and yelling, stopped her crying and managed to smile. "Come here, Dickie," she said, and put her other arm around me. "Nobody blames you, Dickie. Whatever happens, you weren't at fault. Remember that, Dickie."

So I let her kiss me and then sat with them for a while, but I felt worse than before. I kept thinking about the runt, somewhere out there, and

his oxygen running out. Maybe it wasn't my fault, but I could have prevented it and I knew it. I shouldn't have depended on Mother to look out for him; she's no good at that sort of thing. She's the kind of person that would mislay her head if it wasn't knotted on tight - the ornamental sort. Mother's good, you understand, but she's not practical. She would take it pretty hard if the runt didn't come back. And so would Dad-and so would I. The runt is an awful nuisance, but it was going to seem strange not to have him around underfoot. I got to thinking about that remark, "Like a fish out of water." I accidentally busted an aquarium once; I remember yet how they looked. Not pretty. If the runt was going to die like that - I shut myself up and decided I just had to figure out some way to help find him.

After a while I had myself convinced that I could find him if they would just let me help look. But they wouldn't of course.

Dr. Evans the Director showed up again-he'd met us when we first came in - and asked if there was anything he could do for us and how was Mrs. Logan feeling? "You know I wouldn't have had this happen for the world," he added. "We're doing all we can. I'm having some ore-detectors shot over from Luna City. We might be able to spot the child by the metal in his suit."

Mother asked how about bloodhounds and Dr. Evans didn't even laugh at her. Dad suggested helicopters, then corrected himself and made it rockets. Dr. Evans pointed out that it was impossible to examine the ground closely from a rocket.

I got him aside presently and braced him to let me join the hunt. He was polite but unimpressed, so I insisted. "What makes you think you can find him?", he asked me. "We've got the most experienced Moon men available out there now. I'm afraid, son, that you would get yourself lost or hurt if you tried to keep up with them. In this country, if you once lose sight of landmarks, you can get hopelessly lost."

"But look, Doctor," I told him, "I know the runt-I mean my kid brother, better than anyone else in the world. I won't get lost-I mean I will get lost but just the way he did. You can send somebody to follow me."

He thought about it. "It's worth trying," he said suddenly. "I'll go with you. Let's suit up."

We made a fast trip out, taking thirty-foot strides-the best I could manage even with Dr. Evans hanging on to my belt to keep me from stumbling. Mr. Perrin was expecting us. He seemed dubious about my

scheme. "Maybe the old 'lost mule' dodge will work," he admitted, "but I'll keep the regular search going just the same. Here, Shorty, take this flashlight. You'll need it in the shadows."

I stood on the edge of the crater and tried to imagine I was the runt, feeling bored and maybe a little bit griped at the lack of attention. What would I do next?

I went skipping down the slope, not going anywhere in particular, the way the runt would have done. Then I stopped and looked back, to see if Mother and Daddy and Dickie had noticed me. I was being followed all right; Dr. Evans and Mr. Perrin were close behind me. I pretended that no one was looking and went on. I was pretty close to the first rock outcroppings by now and I ducked behind the first one I came to. It wasn't high enough to hide me but it would have covered the runt. It felt like what he would do; he loved to play hide-and-go-seek - it made him the center of attention.

I thought about it. When the runt played that game, his notion of hiding was always to crawl under something, a bed, or a sofa, or an automobile, or even under the sink. I looked around. There were a lot of good places; the rocks were filled with blow holes and overhangs. I started working them over. It seemed hopeless; there must have been a hundred such places right around close.

Mr. Perrin came up to me as I was crawling out of the fourth tight spot. "The men have shined flashlights around in every one of these places," he told me. "I don't think it's much use, Shorty."

"Okay," I said, but I kept at it. I knew I could get at spots a grown man couldn't reach; I just hoped the runt hadn't picked a spot I couldn't reach.

It went on and on and I was getting cold and stiff and terribly tired. The direct sunlight is hot on the Moon, but the second you get in the shade, it's cold. Down inside those rocks it never got warm at all. The suits they gave us tourists are well enough insulated, but the extra insulation is in the gloves and the boots and the seats of the pants-and I had been spending most of my time down on my stomach, wiggling into tight places.

I was so numb I could hardly move and my whole front felt icy. Besides, it gave me one more thing to worry about - how about the runt? Was he cold, too?

If it hadn't been for thinking how those fish looked and how, maybe,

the runt would be frozen stiff before I could get to him, I would have quit. I was about beat. Besides, it's rather scary down inside those holes-you don't know what you'll come to next.

Dr. Evans took me by the arm as I came out of one of them, and touched his helmet to mine, so that I got his voice directly. "Might as well give up, son. You're knocking your self out and you haven't covered an acre." I pulled away from him.

The next place was a little overhang, not a foot off the ground. I flashed a light into it. It was empty and didn't seem to go anywhere. Then I saw there was a turn in it. I got down flat and wiggled in. The turn opened out a little and dropped off. I didn't think it was worthwhile to go any deeper as the runt wouldn't have crawled very far in the dark, but I scrunched ahead a little farther and flashed the light down.

I saw a boot sticking out.

That's about all there is to it. I nearly bashed in my helmet getting out of there, but I was dragging the runt after me. He was limp as a cat and his face was funny. Mr. Perrin and Dr. Evans were all over me as I came out, pounding me on the back and shouting. "Is he dead, Mr. Perrin?" I asked, when I could get my breath. "He looks awful bad."

Mr. Perrin looked him over. "No . . . I can see a pulse in his throat. Shock and exposure, but this suit was specially built-we'll get him back fast." He picked the runt up in his arms and I took out after him.

Ten minutes later the runt was wrapped in blankets and drinking hot cocoa. I had some, too. Everybody was talking at once and Mother was crying again, but she looked normal and Dad had filled out.

He tried to write out a check for Mr. Perrin, but he brushed it off. "I don't need any reward; your boy found him.

"You can do me just one favor-"

"Yes?" Dad was all honey.

"Stay off the Moon. You don't belong here; you're not the pioneer type."

Dad took it. "I've already promised my wife that," he said without batting an eye. "You needn't worry."

I followed Mr. Perrin as he left and said to him privately, "Mr. Perrin-I just wanted to tell you that I'll be back, if you don't mind."

He shook hands with me and said, "I know you will, Shorty."

GUEST OF HONOR SPEECH

AT THE THIRD WORLD

SCIENCE FICTION CONVENTION

DENVER, 1941

THE DISCOVERY OF THE FUTURE

Here in my hand is the manuscript of f a speech. If it works out anything like the synopses I have used, this speech will still be left when I get through.

Before I start, I want to mention an idea that might be fun. It was an innovation in political speaking introduced in California by Upton Sinclair that raised Cain with the ordinary run of political speakers: answering questions from the platform. But I want to put one reservation on it, and that is that questions should be in writing, with names signed, so we can read them into the mike so that I can have clearly in mind what the questions are.

During the course of the last day or so, I have gathered the impression that quite a number of people are interested in the background of my stories; and; in some cases, in my social and political ideas, economic ideas, etc.-some of which, but not all, shows in my stories. Some of them have evidenced an interest in my own personal background. So, if the question comes along, I will do my best to answer it, perhaps dodging the embarrassing ones a little.

To get to the talk itself: THE DISCOVERY OF THE FUTURE. I was told that there was no time limit, so I assumed that he wanted my usual three hour speech. Or, perhaps, we can just keep going until the hall is cleared.

Forry (Ackerman) told you that I have been reading science fiction for a longtime. I have. I have been reading it as long as I could get hold of it, and I probably experienced much the same process most of you did: parental disapproval, those funny looks you get from friends, for reading "that kind of junk."

We here, the science fiction fans, are the lunatic fringe! We are the crazy fools who read that kind of stuff-who read those magazines with the outlandish machines and animals on the covers. You leave one around loose in your home and a friend will pick it up. Those who are not fans ask you if you really read that stuff, and from then on they look at you with suspicion.

Why do we do it? I think I know. This is an opinion, but it is probably why we like science fiction. It is not just for the adventure of the story itself-you can find that in other types of stories. To my mind it is because science fiction has as its strongest factor the single thing that separates the human race from other animals-I refer to a quality which has been termed "time-binding." With a hyphen. It's a term that may not have come to your attention. It is a technical term invented by Alfred Korzybski, and it refers to the fact that the human animal lives not only in the present, but also in the past and the future.

The human animal differs from all other animals only in this one respect. The definition includes both reading and writing. That is the primary technique whereby we are able to make records, to gather data and to look into the future. Other things we do that we think of as making us humans rather than animals-some animals have done at sometime. They form governments. They invent machines. Some animals even use money. I have not seen them doing it, but I have heard reports that I believe to be credible. But time-bind they do not do, to anything like the extent that the human race does.

Time-binding consists of making use of the multitudinous records of the past that we have. On the basis of those records, the data we have collected directly and the data that we get from others by means of time-binding techniques, including reading and writing, we are able to plan our future conduct. It means that we have lived mentally in the past and in the future, as well as in the present. That is certainly true of science fiction fans.

I like the term Future Fiction that Charlie Hornig gave it. It seems to me a little broader than Science Fiction because most of these stories are concerned with the future-what will happen.

In taking the future into account, trying to predict what it will be, and trying to make your plans accordingly, you are time-binding. The child-like person lives from day to day. The adult tries to plan for a year or two at least. Statesmen try to plan for perhaps twenty years or more. There are a few institutions which plan for longer than the lives of men, as for example, the Smithsonian Institution and the Catholic

Church, that think not in terms of lifetimes, but in centuries. They make their plans that far ahead, and to some extent, make them work out.

Science fiction fans differ from most of the rest of the race by thinking in terms of racial magnitudes-not even centuries, but thousands of years. Stapledon thinks in terms of. . . how many years? How far does his time scale go? I don't know: the figures mean nothing to me,

That is what science fiction consists of-trying to figure out from the past and from the present what the future may be. In that we are behaving like human beings.

Now, all human beings time-bind to some extent when they try to discover the future. But most human beings-those who laugh at us for reading science fiction- time-bind, make their plans, make their predictions, only within the limits of their personal affairs. In that respect, they may try to predict for a year or two, make plans, even try to predict for their entire lifetimes, but they rarely try to predict in terms of the culture in which they live. In fact, most people, as compared with science fiction fans, have no conception whatsoever of the fact that the culture they live in does change, that it can change. Even though they may believe it with the top of their minds, they don't believe it way back in the thalamus, in their emotions.

Our grandfathers thought the horse could never be replaced by the auto. Four years after the Wright brothers first flew, they were still trying to get the War Department to come out to look at the airplane. And when one Major General did take a look at an airplane flying, he remarked that it was a very interesting scientific toy, but, of course, it had no possible military application! That was just a short time ago, a very short time.

You will hear that sort of thing around you all the time. I made use, a while ago, of a quotation I would like to use again, from 0. B. Shaw. Referring to Brittanicus in Caesar and Cleopatra, he said, "he is an outlander and a barbarian and he believes that the customs of his tribe are the laws of nature." That is what you are up against when you try to get most people to read science fiction. That is why they think you are crazy, because they believe that the customs of their tribe are the laws of nature, immutable and unchanging. They do not believe in changes.

Phrases like "There'll always be an England" are pleasant and inspiring at the present time, but we know better. There won't always be an

England, nor a Germany, nor a United States, a Baptist Church, nor monogamy, nor the Democratic Party, nor the modesty taboo, nor the superiority of the white race, nor airplanes. Nor automobiles. They will go. They will be gone-we'll see them go. Any custom, institution, belief, or social structure that we see around us today will change, will pass, and most of those we will see change and pass.

In science fiction, we try to envision what those changes might be. Our guesses are usually wrong; they are almost certain to be wrong. Some men, with a greater grasp on data than others, can do remarkably well. H. G. Wells, who probably knows more (on the order of ten times as much, or perhaps higher) than most science fiction writers, has been remarkably successful in some of his predictions. Most of us aren't that lucky;

I do not expect my so-called History of the Future to come to pass. I think some of the trends in it may show up, but I do not think that my factual predictions as such are going to come to pass, even in their broad outlines.

You speak of this sort of thing to an ordinary man- tell him that things are going to change-he will admit it, but he does not believe it at all. He believes it just with the top of his mind. He believes in "progress." He thinks things will get a little bit bigger, and louder, and brighter, a few more neon signs. But he does not believe that any actual change in the basic nature of the culture in which he lives, or its technology, will take place.

Airplanes he thinks are all right, but those crazy rocket ship things! Why, a rocket ship couldn't possibly fly. It hasn't got anything to PUSH on. That is the way he feels about it.

There will never be any rocket ships. That is all right for Buck Rogers in the funny papers. He does not believe that there could be rocket ships, nor does he believe that there will be things that will make rockets look like primitive gadgets that even the wildest of the science fiction writers have not been able to guess or think about. Rocket ships are about as far as I am willing to go because I have not got data enough to think about, to make a reasonable guess about the other forms of transportation or gadgets we may have.

But that same man did not believe in airplanes in 1910!

I have spoken primarily of mechanical changes because they are much easier to show, to point to, than the more subtle sociological changes,

cultural changes, changes in our customs. Some of these can be pointed out. I would like to point out one of them right now. The word "syphilis" could not be used in public even as short a time as fifteen years ago.

Yet, as I used it here, I did not see any shock around the room-nobody minded it-even the Ladies' Home Journal runs articles on it. We are getting a little more civilized in that respect than we were twenty years ago. Our grandfathers considered that word indecent. They believed that things that were decent and indecent were subject to absolute rules, that they were laws of nature. The majority of people around us now believe that their criteria of decency and indecency are absolute, that they won't change, that there are some things that are right, and some things that are wrong. They do not know enough about past history to be able to make any predictions about the future.

I could think of some rude words to use in that connection, words that are still rude now. I think it quite possible that twenty years from now on this same platform I could use those words and not produce any shock around the room.

For things do change. And words which we consider utterly indecent today may very possibly simply be used as tags, as terms with no emotional connotation to them, twenty years from now.

We happen to live in a period of sudden and drastic change in a good many of the things that happen to us. I think it is extremely important that we be prepared for that change and for that reason, I think that science fiction fans are better prepared to face the future than the ordinary run of people around them, because they believe in change.

To that extent, I think that science fiction, even the corniest of it, even the most outlandish of it, no matter how badly it's written, has a distinct therapeutic value because all of it has as its primary postulate that the world does change. I cannot overemphasize the importance of that idea.

Unless you believe that, unless you are prepared for it-as I know all of you are-you can't retain your sanity these days. When a man makes predictions and they keep failing to come true, time and again, he goes insane, functionally insane. It has been proved in laboratories time and again. It has been proved with respect to men, but I'll give an illustration with respect to animals.

The well-known experiment was performed with rats, an experiment

in which a rat was disappointed in his predictions time and again. He went crazy. It happens to work the same way with men. Things do not necessarily work the same way with animals as they do with men, but in this case, there is data to prove it. The inability to believe in change makes absolutely certain that your prediction will disappoint you. That does not apply to this group, but it does apply to a great many people.

For that reason, I believe we are in a period in which large portions of the human race will be in a condition of, if not insanity, at least unsanity. We see that over a large portion of the world today. I think we have seen it crawling up on us for a number of years. In 1929 we had the market crash and people jumped out of the window as a result of not being able to predict things which were perfectly obvious, written on the face of the culture, something that would happen.

The Depression came along, and the madhouses filled up again. Other only slightly less slaphappy individuals proceeded to be a bit unsane by concocting the most wildly unscientific schemes for making everybody rich by playing musical chairs.. Not quite crazy-they could still find their way around and take street cars and not get lost, but not quite sane either. That can lead, if it goes on long enough, to a condition of mass insanity that none of us is going to like.

Nevertheless, we science fictionists, I think, are better prepared for it than others. During a period of racial insanity, mass psychoses, hysteria, manic depression, paranoia, it is possible for a man who believes in change to hold on, to arrest his judgment, to go slow, to take a look at the facts, and not be badly hurt. Things will probably happen to us, very unpleasant indeed, we can't separate ourselves from the matrix in which we find ourselves. Nevertheless, WE stand a chance, for I am very much afraid that a great many people of the type who laugh at us for dealing with this stuff, will not be able to hang on.

The important thing is to hang on to your sanity, to preserve sanity while it happens-no matter what bad things happen to the world.. As individuals it may be difficult for us to do anything about it, even though all of us in our own ways, and according to our lights, are trying. But this series of wars that we find the world in now may go on for another five years, ten years, twenty years-it may go on for fifty years-you and I may not live to see the end of it.

I, personally, have hopes-wishful thinking-that it will terminate quickly enough so that I can pass the rest of my lifetime in

comparative peace and comfort. But I'm not optimistic about it. During such a period, it is really difficult to keep a grip on yourself, but I think that we are better prepared to than some of the others.

I can speak more freely here than I could in a political. meeting, because it's a highly selected group. I've known a good many science fiction fans, and I've observed, statistically, certain things about them. Most of them are young as compared with other groups, most of them are extremely precocious-quite brilliant. I'd be very much interested to see IQs run on a typical group of fans.

But, even without IQs I know that most of the people here are way above average in intelligence. I've had enough data on it to know. I'm not trying to flatter you, I'm not interested in that. I am interested in the fact that you have unusually keen minds. However, that lays us open, and I am including myself in this, lays us open to dangers that don't hit the phlegmatic, the more stolid. Unless we are able to predict, we are even more likely to be subjected to functional unsanities than those around us.

I'm preaching, sure. I know that. I could have filled a speech with wisecracks and with stories and anecdotes, but I feel very deeply about this. And if you can bear with me for a few minutes more, I still want to talk about it.

There's a way out, there's something that we can do to protect ourselves, something that would protect the rest of the human race from the sort of things that are happening to them, and are going to happen to them. It's very simple, and it's right down our alley: the use of the scientific method.

I'm not talking about the scientific method used in the laboratory. The scientific method can be used to protect ourselves from serious difficulties of other sorts-getting our teeth smashed in-in our everyday life, twenty-four hours of the day.

I should say what I mean by the scientific method. Since I have to define it in terms of words, I can't be as clear as I might be if I were able to make an extensional definition. But I mean a comparatively simple thing by the scientific method: the ability to look at what goes on around you. Listen to what you hear, observe, note facts, delay your judgment, and make your own predictions. That's all there is, really, to the scientific method: to be able to distinguish facts from non-facts.

I used the term "fact." I used it in a technical sense, and I should say what I mean by a fact. A fact is anything that has happened before this moment, on July 4th, 1941. Anything that has already happened before this moment. Anything after this moment is a non-fact. Most people can't distinguish between them. They regard as a fact that they're going to get up and have breakfast tomorrow morning. They get the difference between facts and non-facts completely mixed up, and in particular, these days people are getting very mixed up between facts and. theories, isms, ologies and so forth, so-called "laws of nature," depending on what year you happen to be speaking.

That distinction between fact and fiction, fact and non-fact, is of extreme importance to us now. It has even become a strong issue in the field of science fiction. Without referring to any movement by name, or any person by name, because I wish to make an illustration, I want to invite your attention to the fact that the science fiction field has been very much stirred up by a semipolitical movement which uses the word "fact" quite extensively. But it uses the word fact with reference to what they are-what they predict will happen in the future, and that's a non-fact. And any movement, institution, any theory, which does not make a clear and decided distinction between fact and non-fact, cannot by any stretch of the imagination be called a scientific movement. It simply is not because it does not use the scientific method. No matter how complicated their terminology may be, or how much they may use the argot of science.

I'm going to have to make an excursion here. I've wandered somewhat from the talk I had in mind.

I want to make another comment on science fiction and the fact that you and I have to put up with an awful lot of guff from people because of the orthodox point of view with which it is regarded.

I have never been able to understand quite why it is that the historical novel is the most approved, the most sacred form of literature. The contemporary novel is next so; but the historical novel, if you write an historical novel, that's literature.

I think that the corniest tripe published in a science fiction magazine (and some of it isn't too hot, we know that; some of my stuff isn't so hot) beats all of the Anthony Adverses and Gone With the Winds that were ever published, because at least it does include that one distinctly human-like attempt to predict the future.

One would think that the literary critics and the professors of English-

those who make a business of deciding what is good and what is bad in literature-had some connection in their ancestry with the Fillyloo Bird. I think you know the Fillyboo Bird: he flew backwards because he didn't care where he was going, but he liked to see where he had been.

I want to mention the fashion in which the scientific method-just the matter of observing what goes on around you-observing it through your own eyes, instead of taking other people's opinions, reserving your judgments until you have enough data on which to make a judgment-can be of real use to you even now, quite aside from any possible worse period in history, in the coming history.

I mentioned that it can keep your teeth from getting knocked in; that's an important point. It can because you'll stay out of controversies and out of arguments that you would otherwise get into. If you are talking with a man who obviously does not bother to use the scientific method, or does not know how to use the scientific method in his everyday life, you'll never get in an argument with him. You'll know there's no point in an argument with him, that you cannot possibly convince him. You can listen-and you'll get some new data from him-and you'll be better able to predict thereafter, if on no other point than the fact that you'll be better able to predict what his reactions will be.

There are other advantages, in the way of keeping yourself cooled down, so you can be a little happier. For example, a man who uses the scientific method cannot possibly be anti-Semitic. I have made that an illustration because it has caused a lot of trouble in the world lately. Why can't he be anti-Semitic? For a very simple reason: he doesn't have enough data, consequently he hasn't formed an opinion. No matter how long he lives he can't hate all Jews, and unless he knows all Jews, he can't hate all Jews, because he doesn't form an opinion unless he has data. It is possible for him to hate an individual Jew as it's possible for him to hate an individual Irishman or Rotarian or man or woman.

But he can't possibly be anti-Semitic. He can't hate all capitalists, he can't hate all unions, he can't hate all women-you can't be a woman-hater, not if you use the scientific method. You can't possibly: you don't know all women. You don't even know a large enough percentage of the group to be able to form an opinion on what the whole group may be!

By the same reasoning, it's very difficult for him to hate at all; and if

you can just manage to keep hate out of your life (or a good portion of it-I can't keep it all out of my life myself. I've got to sit down and whip myself about the head and shoulders to get myself calmed down at times-but you can help yourself with this method)-if you can keep hate out of your life, you can keep from; getting your teeth knocked in. You can keep out of a lot of difficulties and take care of yourself in a better fashion.

A man who uses the scientific method cannot possibly believe that all politicians are crooks, for he knows that one datum destroys the generalization. I'll give you one datum on that point: Senator George Norris, whether you like him or not, is a saint on earth. Whether you agree with his opinions or not, he's not a bad man.

And because he's never entirely certain of his own opinions on any subject, a man using the scientific method stays out of arguments, keeps himself from the emotional upsets that cause you to lose sleep and upset your stomach. You get such things as herpes-oh, I'm not an M.D., but there are plenty of functional disorders that a man can avoid, can very well avoid.

Here's a rough picture of the scientific man in everyday life. Such a man stands a better chance of living through our period to a ripe and-happy old age, in my opinion. But I wish to make plain that the use of the scientific method does not depend on any formal education in science. It is an attitude and point of view and not a body of information. You need have no formal education at all to use the scientific method in your everyday life. I am not disparaging the body of scientific information that has been gathered by specialists or the equally enormous body of historical and sociological data that is available. Unfortunately, we can't get very much of it. But you can still use the scientific method, whether you've bad a lot of education or not, whether you've had time to gather a lot of personal data or not.

With respect to the acquisition of scientific training, I've heard people around fan clubs remark, "I wish I knew something about mathematics," or "I wish I understood something about physics." Complaints that they're not fully appreciating some of the stories because they don't have enough specialized information. Some subject was too hard, or they weren't able to go far enough in school. I greatly sympathize with that.

I'm not trying to play it down or anything of the sort. It's very much of a regret to me that I'm not at least twins and preferably triplets, so

that I could have time to study the various things that I'm interested in. And I know that a lot of you have felt the same way-that life is just too-not too short, but too narrow-we don't have room enough, time enough, to get around and learn all the things that we want to, and it is almost impossible for us to get a full picture of the world.

Surprising, that the data actually is available. God knows that no one can even hope to cover even a small corner of the scientific world these days. I think there's a way out of the dilemma, however, a fair one for us, and a better one for our children. It's the creation of a new technique to cover just that purpose. Men who might be considered encyclopedists, or interpreter-synthesists, I like to call them, men who make it their business to find out what it is the specialists have learned, and then apply it to the rest of us in consolidated form so that we can have, if not the details of the picture, at least the broad I outlines of the enormous, incredibly enormous, mass of data that the human race has gathered. The facts behind us, the things that have happened before this moment, so that we can be better able to predict for ourselves, plan our lives after this moment.

There's only one synthesist who has really made such an attempt up to the present time, and I'm very pleased that it happens to be possibly the greatest of the science fiction writers: H. G. Wells. Wells perhaps didn't do a good job of it-good Lord! he didn't have a chance to; he had nobody before him, he did the pioneer work. He started it. But H. G. Wells, in his trilogy, The Outline of History, The Science of Life and The Work, Wealth, and Happiness of Mankind, is, so far as I know, the only writer who has ever lived who has tried to draw for the rest of us a full picture of the whole world, past and future, everything about us, so we can stand off and get a look at ourselves.

It will be better in the future. Nevertheless, it was great work, the fact that he did it, that he tried at all. A wonderful work. Because he had done that kind of work, that he tried to do that kind of work for the rest of us, is the reason, to my mind why his scientific fantasies are more nearly accurate in their predictions than those of, oh, myself, and various other commercial writers in the field. I don't know as much as H. G. Wells: I probably never will know as much as H. U. Wells-my predictions can't be as accurate.

But, after considering H. G. Wells' trilogy, it occurred to me that it would be amusing, to me at least, and I hope to you, for me to mention some books by assorted writers that, to a certain extent, help to fill in the gaps in the picture. And-to a certain extent, help to make up the lack of a broad comprehensive scientific education, which no

one, not even Sc.D.s and Ph.D.s, can really have.

For example, in mathematics, is there one book which will help the non-mathematician, the person who hasn't specialized in it and made it his life work, to appreciate what mathematics is for? I've run across such a book; it's called Mathematics and the Imagination by Kasner and Newman. You don't have to have any mathematical education to read it. To my mind, it's a very stimulating book, a very interesting book, and when you've finished reading it, you at least know what the mathematicians are doing and why.

Among other things, you will discover-and this runs entirely contrary to our orthodox credos-that mathematics is not a science. Mathematics is not a science at all-it's an aspect of symbology, along with the alphabet. That there is no such thing as discovering mathematics, for example. Mathematics is invented; it's an invented art, and has nothing directly to do with science at all, except as a tool. And yet you will hear the ordinary layman speaking time and again of mathematics as a science. It just plain is not because it has no data in it; purely inventions, every bit of it, even the multiplication tables. Yes, 2 x 2 is 4 is an invention in mathematics, not a fact.

There are other such books. In physics, there is Eddington's Nature of the Physical World, I think one of the most charming books ever written, one of the most lucidly and brilliantly written books. It gives a beautiful background to modern physics. It's approximately fifteen years old, so in order to cover a lot of the things that are currently being used for fiction in the science fiction field, you would need to supplement that. The book I got for my own purpose to supplement it-because, you see, I'm not a professional physicist, I'm an engineer-to help to bring it up to date, is White's Classical and Modern Physics, published in 1940. It is about the latest book-bound thing on modern physics that I know of.

There are later things in such publications as Physical Review and Nature, but this goes up to and including the fission of uranium. It includes nuclear physics, and it delighted me to find the thought that, very likely when we got around to it, we'd find life on other planets. A very stimulating thing to get from a professional scientist, particularly in the field of physical sciences. I picked that book because White is an associate of Lawrence in the nuclear laboratory at Berkeley. In other words, he is in on the ground floor, he knows what he's talking about. It's modern physics, 1940, the best up to that time.

So far as astronomy is concerned, I've never seen anything that

surpassed, for a popular notion of the broad outlines of the kind of physical world we live in, than John Campbell's series that appeared in Astounding. They started in 1936, and ran on for fifteen or sixteen issues, his articles on the solar system. I've always been sorry that Campbell did not go on from there and cover stellar astronomy, galactic astronomy, and some of the other side fields. But, even at that, anybody who has read through that series by Campbell on the solar system will never again have a flat-world attitude, which most people do have. Not in the science fiction field, of course-I mean not among fans of science fiction.

(I speak many times as if the human race were divided into two parts, as it may be; people who love science fiction, and people who don't. I think you will be able to keep sorted out which ones I'm talking about. I hope so.)

In the field of economics, an incomplete science, but nevertheless one that you can't possibly ignore, I think the most illuminating book I've ever, read is one by Maurice Colburn, called Economic Nationalism. The title won't give any suggestion of what the contents are, but that is simply the tag by which it is known.

Jim Fancy's Behind the Ballots is probably as nice a job of recording actual data in politics as I've ever seen; however, politics-I'd never recommend that people read books in the political field.

Go out and take a look yourself Everything else you hear is guff.

I saved for the last on that list of the books that have greatly affected me, that to my mind are key books, of the stuff I've plowed through, a book which should head the list on the must list. I wish that everyone could read the book. There aren't many copies of it, and everyone can't, nor could everyone read this particular book. All of you could-you've got the imagination for it. It's Science and Sanity by Count Alfred Korzybski, one of the greatest Polish mathematicians when he went into the subject of symbology and started finding out what made us tick, and then worked up in strictly experimental and observational form from the preliminary work of E. T. Bell.

A rigor of epistemology based on E. T. Bell [break in transcript here-some words lost]. . . symbology of epistemology. The book refers to the subject of semantics. I know from conversation with a lot of you that the words epistemology and semantics are not unfamiliar to you. But because they may be unfamiliar to some, I'm going to stop and give definitions of those words.

Semantics is simply a study of the symbols we use to communicate. General Semantics is an extension of that study to investigate how we evaluate the use of those symbols. Epistemology is the study of how we know what we know. Maybe that doesn't sound exciting. It is exciting, it's very exciting. To be able to delve back into your own mind and investigate what it is you know, what it is you can know, and what it is that you cannot possibly know, is, from a standpoint of intellectual adventure, I think, possibly- the greatest adventure that a person can indulge in. Beats spaceships.

Incidentally, any of you who are going to be in Denver in the next five or six weeks will have an opportunity, one of the last opportunities, to hear Alfred Korzybski speak in person. He will be here at a meeting (similar to this) of semanticians from all over the world; McLean from Los Angeles, and Johnson from Iowa, and Reisser from Mills College and Kendig and probably Hayakawa from up in Canada-the leading semanticians of the world-to hear Korzybski speak.

It is much better to hear him speak than it is to read his books. He's limited by the fact that he's got to stick to the typewriter, to the printed word, but when he talks, when he talks, it's another matter! He gestures, he's not tied down with his hands to the desk the way I am, he walks, stumps all around the stage, and waves his hands, and when he's putting quotation marks on a word, he puts them on... [illustrates, audience laughs]. And you really gather what he means. Incidentally, he looks like Conan Doyle's description of Professor Challenger if Professor Challenger had shaved his beard. Dynamic character.

You may not like him personally, but he's at least as great a man as Einstein, at least, because his field is broader. The same kind of work that Einstein did, the same kind of work using the same methods, but in a much broader field, much closer to human relationships. I hope that some of you will be able to hear him. I said that this will be one of the last chances, because the old man's well over seventy now. As he puts it, "I vill coagulate someday, I vill someday soon, I vill coagulate," which is the term he uses for dying.

He speaks in terms of colloidal chemistry. Properly, it's appropriate. He won't last much longer. In the meantime, he's done a monumental piece of work that H. G. Wells did in the matter of description, and the two together are giants in our intellectual horizon, our intellectual matrix today, that stick up over the rest like the Empire State Building.

I started out to talk primarily about science fiction and I got off on some of my own hobbies. It's a luxury to me not to be held down by a plot and a set of characters. Here I can say anything I like and not be bothered.

I myself have been- reading science fiction since Gernsback started putting it out in the Electrical Experimenter. Then I read it in Argosy and I dug up all that I could out of the Kansas City Public Library. Every member of my family had a library card; there were seven of us, so I could bring home quite a number of books at one time. I wear glasses now as a result. I never had any particular notion of writing it until about two years ago when a concatenation of peculiar circumstances started me writing. I happened to hit the jackpot on the first one, so I continued writing. It amazed me to discover that people gave money away for doing things like that-it beats working.

It's likely that I won't be writing very much longer. With the way things are shaping up, I'll probably have other things I'll have to do, as will others here, whether we like it or not. But I hope to be a fan of science fiction for at least fifty years if I can hold myself together that long and keep from getting my teeth kicked in.

All I really want to do is to hang around as long as I can, watch the world unfold, see some of the changes-what they really are-that suits me.

THE GREEN HILLS OF EARTH

This is the story of Rhysling, the Blind Singer of the Spaceways -- but not the official version. You sang his words in school:

"I pray for one last landing

On the globe that gave me birth;

Let me rest my eyes on the fleecy skies

And the cool, green hills of Earth."

Or perhaps you sang in French, or German. Or it might have been Esperanto, while Terra's rainbow banner rippled over your head.

The language does not matter -- it was certainly an Earth tongue. No one has ever translated "Green Hills" into the lisping Venerian speech; no Martian ever croaked and whispered it in the dry corridors. This is ours. We of Earth have exported everything from Hollywood crawlies

to synthetic radioactives, but this belongs solely to Terra, and to her sons and daughters wherever they may be.

We have all heard many stories of Rhysling. You may even be one of the many who have sought degrees, or acclaim, by scholarly evaluations of his published works - _Songs of the Spaceways_, _The Grand Canal and other Poems_, _High and Far_, and _"UP SHIP!"_

Nevertheless, although you have sung his songs and read his verses, in school and out your whole life, it is at least an even money bet -- unless you are a spaceman yourself -- that you have never even heard of most of Rhysling's unpublished songs, such items as _Since the Pusher Met My Cousin_, _That Red-Headed Venusburg Gal_, _Keep Your Pants On, Skipper_, or _A Space Suit Built for Two_.

Nor can we quote them in a family magazine.

Rhysling's reputation was protected by a careful literary executor and by the happy chance that he was never interviewed. _Songs of the Spaceways_ appeared the week he died; when it became a best seller, the publicity stories about him were pieced together from what people remembered about him plus the highly colored handouts from his publishers.

The resulting traditional picture of Rhysling is about as authentic as George Washington's hatchet or King Alfred's cakes.

In truth you would not have wanted him in your parlor; he was not socially acceptable. He had a permanent case of sun itch, which he scratched continually, adding nothing to his negligible beauty.

Van der Voort's portrait of him for the Harriman Centennial edition of his works shows a figure of high tragedy, a solemn mouth, sightless eyes concealed by black silk bandage. He was never solemn! His mouth was always open, singing, grinning, drinking, or eating. The bandage was any rag, usually dirty. After he lost his sight he became less and less neat about his person.

"Noisy" Rhysling was a jetman, second class, with eyes as good as yours, when he signed on for a ioop trip to the Jovian asteroids in the RS _Goshawk_. The crew signed releases for everything in those days; a Lloyd's associate would have laughed in your face at the notion of insuring a spaceman. The Space Precautionary Act had never been heard of, and the Company was responsible only for wages, if and when. Half the ships that went further than Luna City never came back. Spacemen did not care; by preference they signed for shares,

and any one of them would have bet you that he could jump from the 200th floor of Harriman Tower and ground safely, if you offered him three to two and allowed him rubber heels for the landing.

Jetmen were the most carefree of the lot, and the meanest. Compared with them the masters, the radarmen, and the astrogators (there were no supers nor stewards in those days) were gentle vegetarians. Jetmen knew too much. The others trusted the skill of the captain to get them down safely; jetmen knew that skill was useless against the blind and fitful devils chained inside their rocket motors.

The _Goshawk_ was the first of Harriman's ships to be converted from chemical fuel to atomic power-piles -- or rather the first that did not blow up. Rhysling knew her well; she was an old tub that had plied the Luna City run, Supra-New York space station to Leyport and back, before she was converted for deep space. He had worked the Luna run in her and had been along on the first deep space trip, Drywater on Mars -- and back, to everyone's surprise.

He should have made chief engineer by the time he signed for the Jovian loop trip, but, after the Drywater pioneer trip, he had been fired, blacklisted, and grounded at Luna City for having spent his time writing a chorus and several verses at a time when he should have been watching his gauges. The song was the infamous _The Skipper is a Father to his Crew_, with the uproariously unprintable final couplet.

The blacklist did not bother him. He won an accordion from a Chinese barkeep in Luna City by cheating at onethumb and thereafter kept going by singing to the miners for drinks and tips until the rapid attrition in spacemen caused the Company agent there to give him another chance. He kept his nose clean on the Luna run for a year or two, got back into deep space, helped give Venusburg its original ripe reputation, strolled the banks of the Grand Canal when a second colony was established at the ancient Martian capital, and froze his toes and ears on the second trip to Titan.

Things moved fast in those days. Once the power-pile drive was accepted the number of ships that put out from the LunaTerra system was limited only by the availability of crews. Jetmen were scarce; the shielding was cut to a minimum to save weight and few married men cared to risk possible exposure to radioactivity. Rhysling did not want to be a father, so jobs were always open to him during the golden days of the claiming boom. He crossed and recrossed the system, singing the doggerel that boiled up in his head and chording it out on his accordion.

The master of the _Goshawk_ knew him; Captain Hicks had been astrogator on Rhysling's first trip in her. "Welcome home, Noisy," Hicks had greeted him. "Are you sober, or shall I sign the book for you?"

"You can't get drunk on the bug juice they sell here, Skipper." He signed and went below, lugging his accordion.

Ten minutes later he was back. "Captain," he stated darkly, "that number two jet ain't fit. The cadmium dampers are warped."

"Why tell me? Tell the Chief."

"I did, but he says they will do. He's wrong."

The captain gestured at the book. "Scratch out your name and scram. We raise ship in thirty minutes."

Rhysling looked at him, shrugged, and went below again.

It is a long climb to the Jovian planetoids; a Hawk-class clunker had to blast for three watches before going into free flight. Rhysling had the second watch. Damping was done by hand then, with a multiplying vernier and a danger gauge. When the gauge showed red, he tried to correct it -- no luck.

Jetmen don't wait; that's why they are jetmen. He slapped the emergency discover and fished at the hot stuff with the tongs. The lights went out, he went right ahead. A jetman has to know his power room the way your tongue knows the inside of your mouth.

He sneaked a quick look over the top of the lead baffle when the lights went out. The blue radioactive glow did not help him any; he jerked his head back and went on fishing by touch.

When he was done he called over the tube, "Number two jet out. And for crissake get me some light down here!"

There was light -- the emergency circuit -- but not for him. The blue radioactive glow was the last thing his optic nerve ever responded to.

2

"As Time and Space come bending back to shape this starspecked scene,

The tranquil tears of tragic joy still spread their silver sheen;

Along the Grand Canal still soar the fragile Towers of Truth;

Their fairy grace defends this place of Beauty, calm and couth.

"Bone-tired the race that raised the Towers, forgotten are their lores,

Long gone the gods who shed the tears that lap these crystal shores.

Slow heats the time-worn heart of Mars beneath this icy sky;

The thin air whispers voicelessly that all who live must die --

"Yet still the lacy Spires of Truth sing Beauty's madrigal

And she herself will ever dwell along the Grand Canal!"

-- from The Grand Canal, by permission of Lux Transcriptions, Ltd., London and Luna City

On the swing back they set Rhysling down on Mars at Drywater; the boys passed the hat and the skipper kicked in a half month's pay. That was all -- finish -- just another space bum who had not had the good fortune to finish it off when his luck ran out. He holed up with the prospectors and archeologists at How-Far? for a month or so, and could probably have stayed forever in exchange for his songs and his accordion playing. But spacemen die if they stay in one place; he hooked a crawler over to Drywater again and thence to Marsopolis.

The capital was well into its boom; the processing plants lined the Grand Canal on both sides and roiled the ancient waters with the filth of the runoff. This was before the TriPlanet Treaty forbade disturbing cultural relics for commerce; half the slender, fairylike towers had been torn down, and others were disfigured to adapt them as pressurized buildings for Earthmen.

Now Rhysling had never seen any of these changes and no one described them to him; when he "saw" Marsopolis again, he visualized it as it had been, before it was rationalized for trade. His memory was good. He stood on the riparian esplanade where the ancient great of Mars had taken their ease and saw its beauty spreading out before his blinded eyes -- ice blue plain of water unmoved by tide, untouched by breeze, and reflecting serenely the sharp, bright stars of the Martian sky, and beyond the water the lacy buttresses and flying towers of an architecture too delicate for our rumbling, heavy planet.

The result was _Grand Canal_.

The subtle change in his orientation which enabled him to see beauty at Marsopolis where beauty was not now began to affect his whole life. All women became beautiful to him. He knew them by their voices and fitted their appearances to the sounds. It is a mean spirit indeed who will speak to a blind man other than in gentle friendliness; scolds who had given their husbands no peace sweetened their voices to Rhysling.

It populated his world with beautiful women and gracious men. _Dark Star Passing_, _Berenice's Hair_, _Death Song of a Wood's Colt_, and his other love songs of the wanderers, the womenless men of space, were the direct result of the fact that his conceptions were unsullied by tawdry truths. It mellowed his approach, changed his doggerel to verse, and sometimes even to poetry.

He had plenty of time to think now, time to get all the lovely words just so, and to worry a verse until it sang true in his head. The monotonous beat of _Jet Song_ --

When the field is clear, the reports all seen,

When the lock sighs shut, when the lights wink green,

When the check-off's done, when it's time to pray,

When the Captain nods, when she blasts away --

Hear the jets!

Hear them snarl at your back

When you're stretched on the rack;

Feel your ribs clamp your chest,

Feel your neck grind its rest.

Feel the pain in your ship,

Feel her strain in their grip.

Feel her rise! Feel her drive!

Straining steel, come alive,

On her jets!

--came to him not while he himself was a jetman but later while he was hitch-hiking from Mars to Venus and sitting out a watch with an old shipmate.

At Venusburg he sang his new songs and some of the old, in the bars. Someone would start a hat around for him; it would come back with a minstrel's usual take doubled or tripled in recognition of the gallant spirit behind the bandaged eyes.

It was an easy life. Any space port was his home and any ship his private carriage. No skipper cared to refuse to lift the extra mass of blind Rhysling and his squeeze box; he shuttled from Venusburg to Leyport to Drywater to New Shanghai, or back again, as the whim took him.

He never went closer to Earth than Supra-New York Space Station. Even when signing the contract for _Songs of the Spaceways_ he made his mark in a cabin-class liner somewhere between Luna City and Ganymede. Horowitz, the original publisher, was aboard for a second honeymoon and heard Rhysling sing at a ship's party. Horowitz knew a good thing for the publishing trade when he heard it; the entire contents of _Songs_ were sung directly into the tape in the communications room of that ship before he let Rhysling out of his sight. The next three volumes were squeezed out of Rhysling at Venusburg, where Horowitz had sent an agent to keep him liquored up until he had sung all he could remember.

UP SHIP! is not certainly authentic Rhysling throughout. Much of it is Rhysling's, no doubt, and _Jet Song_ is unquestionably his, but most of the verses were collected after his death from people who had known him during his wanderings.

The Green Hills of Earth grew through twenty years. The earliest form we know about was composed before Rhysling was blinded, during a drinking bout with some of the indentured men on Venus. The verses were concerned mostly with the things the labor clients intended to do back on Earth if and when they ever managed to pay their bounties and thereby be allowed to go home. Some of the stanzas were vulgar, some were not, but the chorus was recognizably that of _Green Hills_.

We know exactly where the final form of _Green Hills_ came from, and when.

There was a ship in at Venus Ellis Isle which was scheduled for the

direct jump from there to Great Lakes, Illinois. She was the old _Falcon_, youngest of the Hawk class and the first ship to apply the Harriman Trust's new policy of extra-fare express service between Earth cities and any colony with scheduled stops.

Rhysling decided to ride her back to Earth. Perhaps his own song had gotten under his skin -- or perhaps he just hankered to see his native Ozark's one more time.

The Company no longer permitted deadheads: Rhysling knew this but it never occurred to him that the ruling might apply to him. He was getting old, for a spaceman, and just a little matter of fact about his privileges. Not senile -- he simply knew that he was one of the landmarks in space, along with Halley's Comet, the Rings, and Brewster's Ridge. He walked in the crew's port, went below, and made himself at home in the first empty acceleration couch.

The Captain found him there while making a last minute tour of his ship. "What are you doing here?" he demanded.

"Dragging it back to Earth, Captain." Rhysling needed no eyes to see a skipper's four stripes.

"You can't drag in this ship; you know the rules. Shake a leg and get out of here. We raise ship at once." The Captain was young; he had come up after Rhysling's active time, but Rhysling knew the type -- five years at Harriman Hall with only cadet practice trips instead of solid, deep space experience. The two men did not touch in background nor spirit; space was changing.

"Now, Captain, you wouldn't begrudge an old man a trip home."

The officer hesitated -- several of the crew had stopped to listen. "I can't do it. 'Space Precautionary Act, Clause Six: No one shall enter space save as a licensed member of a crew of a chartered vessel, or as a paying passenger of such a vessel under such regulations as may be issued pursuant to this act.' Up you get and out you go."

Rhysling lolled back, his hands under his head. "If I've got to go, I'm damned if I'll walk. Carry me."

The Captain bit his lip and said, "Master-at-Arms! Have this man removed."

The ship's policeman fixed his eyes on the overhead struts. "Can't rightly do it, Captain. I've sprained my shoulder." The other crew

members, present a moment before, had faded into the bulkhead paint.

"Well, get a working party!"

"Aye, aye, sir." He, too, went away.

Rhysling spoke again. "Now look, Skipper -- let's not have any hard feelings about this. You've got an out to carry me if you want to -- the 'Distressed Spaceman' clause."

"'Distressed Spaceman', my eye! You're no distressed spaceman; you're a space-lawyer. I know who you are; you've been bumming around the system for years. Well, you won't do it in my ship. That clause was intended to succor men who had missed their ships, not to let a man drag free all over space."

"Well, now, Captain, can you properly say I haven't missed my ship? I've never been back home since my last trip as a signed-on crew member. The law says I can have a trip back."

"But that was years ago. You've used up your chance."

"Have I now? The clause doesn't say a word about how soon a man has to take his trip back; it just says he's got it coming to him. Go look it up. Skipper. If I'm wrong, I'll not only walk out on my two legs, I'll beg your humble pardon in front of your crew. Go on -- look it up. Be a sport."

Rhysling could feel the man's glare, but he turned and stomped out of the compartment. Rhysling knew that he had used his blindness to place the Captain in an impossible position, but this did not embarrass Rhysling -- he rather enjoyed it.

Ten minutes later the siren sounded, he heard the orders on the bull horn for Up-Stations. When the soft sighing of the locks and the slight pressure change in his ears let him know that take-off was imminent he got up and shuffled down to the power room, as he wanted to be near the jets when they blasted off. He needed no one to guide him in any ship of the Hawk class.

Trouble started during the first watch. Rhysling had been lounging in the inspector's chair, fiddling with the keys of his accordion and trying out a new version of _Green Hills_.

"Let me breathe unrationed air again

Where there's no lack nor dearth"

And "something, something, something 'Earth'" -- it would not come out right. He tried again.

"Let the sweet fresh breezes heal me

As they rove around the girth

Of our lovely mother planet,

Of the cool green hills of Earth."

That was better, he thought. "How do you like that, Archie?" he asked over the muted roar.

"Pretty good. Give out with the whole thing." Archie Macdougal, Chief Jetman, was an old friend, both spaceside and in bars; he had been an apprentice under Rhysling many years and millions of miles back.

Rhysling obliged, then said, "You youngsters have got it soft. Everything automatic. When I was twisting her tail you had to stay awake."

"You still have to stay awake." They fell to talking shop and Macdougal showed him the direct response damping rig which had replaced the manual vernier control which Rhysling had used. Rhysling felt out the controls and asked questions until he was familiar with the new installation. It was his conceit that he was still a jetman and that his present occupation as a troubadour was simply an expedient during one of the fusses with the company that any man could get into.

"I see you still have the old hand damping plates installed," he remarked, his agile fingers flitting over the equipment.

"All except the links. I unshipped them because they obscure the dials."

"You ought to have them shipped. You might need them."

"Oh, I don't know. I think--" Rhysling never did find out what Macdougal thought for it was at that moment the trouble tore loose. Macdougal caught it square, a blast of radioactivity that burned him down where he stood.

Rhysling sensed what had happened. Automatic reflexes of old habit

came out. He slapped the discover and rang the alarm to the control room simultaneously. Then he remembered the unshipped links. He had to grope until he found them, while trying to keep as low as he could to get maximum benefit from the baffles. Nothing but the links bothered him as to location. The place was as light to him as any place could be; he knew every spot, every control, the way he knew the keys of his accordion.

"Power room! Power room! What's the alarm?"

"Stay out!" Rhysling shouted. "The place is 'hot.'" He could feel it on his face and in his bones, like desert sunshine.

The links he got into place, after cursing someone, anyone, for having failed to rack the wrench he needed. Then he commenced trying to reduce the trouble by hand. It was a long job and ticklish. Presently he decided that the jet would have to be spilled, pile and all.

First he reported. "Control!"

"Control aye aye!"

"Spilling jet three -- emergency."

"Is this Macdougal?"

"Macdougal is dead. This is Rhysling, on watch. Stand by to record."

There was no answer; dumbfounded the Skipper may have been, but he could not interfere in a power room emergency. He had the ship to consider, and the passengers and crew. The doors had to stay closed.

The Captain must have been still more surprised at what Rhysling sent for record. It was:

We rot in the molds of Venus,

We retch at her tainted breath.

Foul are her flooded jungles,

Crawling with unclean death."

Rhysling went on cataloguing the Solar System as he worked, "--harsh bright soil of Luna--","--Saturn's rainbow rings--","--the frozen night of Titan--", all the while opening and spilling the jet and fishing it clean. He finished with an alternate chorus --

"We've tried each spinning space mote

And reckoned its true worth:

Take us back again to the homes of men

On the cool, green hills of Earth."

--then, almost absentmindedly remembered to tack on his revised first verse:

"The arching sky is calling

Spacemen back to their trade.

All hands! Stand by! Free falling!

And the lights below us fade.

Out ride the sons of Terra,

Far drives the thundering jet,

Up leaps the race of Earthmen,

Out, far, and onward yet--"

The ship was safe now and ready to limp home shy one jet. As for himself, Rhysling was not so sure. That "sunburn" seemed sharp, he thought. He was unable to see the bright, rosy fog in which he worked but he knew it was there. He went on with the business of flushing the air out through the outer valve, repeating it several times to permit the level of radioaction to drop to something a man might stand under suitable armor. While he did this he sent one more chorus, the last bit of authentic Rhysling that ever could be:

"We pray for one last landing

On the globe that gave us birth;

Let us rest our eyes on fleecy skies

And the cool, green hills of Earth."

THE LONG WATCH

"Nine ships blasted off from Moon Base. Once in space, eight of them

formed a globe around the smallest. They held this formation all the way to Earth.

"The small ship displayed the insignia of an admiral-yet there was no living thing of any sort in her. She was not even a passenger ship, but a drone, a robot ship intended for radioactive cargo. This trip she carried nothing but a lead coffin - and a Geiger counter that was never quiet." -from the editorial After Ten Years, film 38, 17 June 2009, Archives of the N.Y. Times

JOHNNY DAHLQUIST blew smoke at the Geiger counter. He grinned wryly and tried it again. His whole body was radioactive by now. Even his breath, the smoke from his cigarette, could make the Geiger counter scream. How long had he been here? Time doesn't mean much on the Moon. Two days? Three? A week? He let his mind run back: the last clearly marked time in his mind was when the Executive Officer had sent for him, right after breakfast - "Lieutenant Dahlquist, reporting to the Executive Officer."

Colonel Towers looked up. "Ah, John Ezra. Sit down, Johnny. Cigarette?"

Johnny sat down, mystified but flattered. He admired Colonel Towers, for his brilliance, his ability to dominate, and for his battle record. Johnny had no battle record; he had been commissioned on completing his doctor's degree in nuclear physics and was now junior bomb officer of Moon Base.

The Colonel wanted to talk politics; Johnny was puzzled. Finally Towers had come to the point; it was not safe (so he said) to leave control of the world in political hands; power must be held by a scientifically selected group. In short - The Patrol.

Johnny was startled rather than shocked. As an abstract idea, Towers' notion sounded plausible. The League of Nations had folded up; what would keep the United Nations from breaking up, too, and thus lead to another World War. "And you know how bad such a war would be, Johnny."

Johnny agreed. Towers said he was glad that Johnny got the point. The senior bomb officer could handle the work, but it was better to have both specialists.

Johnny sat up with a jerk. "You are going to do something about it?" He had thought the Exec was just talking.

Towers smiled. "We're not politicians; we don't just talk. We act."

Johnny whistled. "When does this start?"

Towers flipped a switch. Johnny was startled to hear his own voice, then identified the recorded conversation as having taken place in the junior officers' messroom. A political argument he remembered, which he had walked out on... a good thing, too! But being spied on annoyed him.

Towers switched it off. "We have acted," he said. "We know who is safe and who isn't. Take Kelly-" He waved at the loudspeaker. "Kelly is politically unreliable. You noticed he wasn't at breakfast?"

"Huh? I thought he was on watch."

"Kelly's watch-standing days are over. Oh, relax; he isn't hurt."

Johnny thought this over. "Which list am I on?" he asked. "Safe or unsafe?"

"Your name has a question mark after it. But I have said all along that you could be depended on." He grinned engagingly. "You won't make a liar of me, Johnny?"

Dahlquist didn't answer; Towers said sharply, "Come now - what do you think of it? Speak up."

"Well, if you ask me, you've bitten off more than you can chew. While it's true that Moon Base controls the Earth, Moon Base itself is a sitting duck for a ship. One bomb - blooie!"

Towers picked up a message form and handed it over; it read: I HAVE YOUR CLEAN LAUNDRY-ZACK. "That means every bomb in the Trygve Lie has been put out of commission. I have reports from every ship we need worry about." He stood up. "Think it over and see me after lunch. Major Morgan needs your help right away to change control frequencies on the bombs."

"The control frequencies?"

"Naturally. We don't want the bombs jammed before they reach their targets."

"What? You said the idea was to prevent war."

Towers brushed it aside. "There won't, be a war-just a psychological

demonstration, an unimportant town or two. A little bloodletting to save an all-out war. Simple arithmetic."

He put a hand on Johnny's shoulder. "You aren't squeamish, or you wouldn't be a bomb officer. Think of it as a surgical operation. And think of your family."

Johnny Dahlquist had been thinking of his family. "Please, sir, I want to see the Commanding Officer."

Towers frowned. "The Commodore is not available. As you know, I speak for him. See me again-after lunch."

The Commodore was decidedly not available; the Commodore was dead. But Johnny did not know that.

Dahlquist walked back to the messroom, bought cigarettes, sat down and had a smoke. He got up, crushed out the butt, and headed for the Base's west airlock. There he got into his space suit and went to the lockmaster. "Open her up, Smitty."

The marine looked surprised. "Can't let anyone out on the surface without word from Colonel Towers, sir. Hadn't you heard?"

"Oh, yes! Give me your order book." Dahlquist took it, wrote a pass for himself, and signed it "by direction of Colonel Towers." He added, "Better call the Executive Officer and check it."

The lockmaster read it and stuck the book in his pocket. "Oh, no, Lieutenant. Your word's good."

"Hate to disturb the Executive Officer, eh? Don't blame you." He stepped in, closed the inner door, and waited for the air to be sucked out.

Out on the Moon's surface he blinked at the light and hurried to the track-rocket terminus; a car was waiting. He squeezed in, pulled down the hood, and punched the starting button. The rocket car flung itself at the hills dived through and came out on a plain studded with projectile rockets, like candles on a cake. Quickly it dived into a second tunnel through more hills. There was a stomach-wrenching deceleration and the car stopped at the underground atom-bomb armory.

As Dahlquist climbed out he switched on his walkie-talkie. The space-suited guard at the entrance came to port-arms. Dahlquist said,

"Morning, Lopez," and walked by him to the airlock. He pulled it open. . .

The guard motioned him back. "Hey! Nobody goes in without the Executive Officer's say-so." He shifted his gun, fumbled in his pouch and got out a paper. "Read it, Lieutenant."

Dahlquist waved it away. "I drafted that order myself. You read it; you've misinterpreted it."

"I don't see how, Lieutenant."

Dahlquist snatched the paper, glanced at it, then pointed to a line. "See? '-except persons specifically designated by the Executive Officer.' That's the bomb officers, Major Morgan and me."

The guard looked worried. Dahlquist said, "Damn it, look up 'specifically designated' - it's under 'Bomb Room, Security, Procedure for' in your standing orders. Don't tell me you left them in the barracks!"

"Oh, no, sir! I've got 'em." The guard reached into his pouch. Dahlquist gave him back the sheet; the guard took it, hesitated, then leaned his weapon against his hip, shifted the paper to his left hand, and dug into his pouch with his right.

Dahlquist grabbed the gun, shoved it between the guard's legs, and jerked. He threw the weapon away and ducked into the airlock. As he slammed the door he saw the guard struggling to his feet and reaching for his side arm. He dogged the outer door shut and felt a tingle in his fingers as a slug struck the door.

He flung himself at the inner door, jerked the spill lever, rushed back to the outer door and hung his weight on the handle. At once he could feel it stir. The guard was lifting up; the lieutenant was pulling down, with only his low Moon weight to anchor him. Slowly the handle raised before his eyes.

Air from the bomb room rushed into the lock through the spill valve. Dahlquist felt his space suit settle on his body as the pressure in the lock began to equal the pressure in the suit. He quit straining and let the guard raise the handle. It did not matter; thirteen tons of air pressure now held the door closed.

He latched open the inner door to the bomb room, so that it could not swing shut. As long as it was open, the airlock could not operate; no

one could enter.

Before him in the room, one for each projectile rocket, were the atom bombs, spaced in rows far enough apart to defeat any faint possibility of spontaneous chain reaction. They were the deadliest things in the known universe, but they were his babies. He had placed himself between them and anyone who would misuse them.

But, now that he was here, he had no plan to use his temporary advantage.

The speaker on the wall sputtered into life. "Hey! Lieutenant! What goes on here? You gone crazy?" Dahlquist did not answer. Let Lopez stay confused-it would take him that much longer to make up his mind what to do. And Johnny Dahlquist needed as many minutes as he could squeeze. Lopez went on protesting. Finally he shut up.

Johnny had followed a blind urge not to let the bombs - his bombs! - be used for "demonstrations on unimportant towns." But what to do next? Well, Towers couldn't get through the lock. Johnny would sit tight until hell froze over.

Don't kid yourself, John Ezra! Towers could get in. Some high explosive against the outer door-then the air would whoosh out, our boy Johnny would drown in blood from his burst lungs-and the bombs would be sitting there, unhurt. They were built to stand the jump from Moon to Earth; vacuum would not hurt them at all.

He decided to stay in his space suit; explosive decompression didn't appeal to him. Come to think about it, death from old age was his choice.

Or they could drill a hole, let out the air, and open, the door without wrecking the lock. Or Towers might even have a new airlock built outside the old. Not likely, Johnny thought; a coup d'etat depended on speed. Towers was almost sure to take the quickest way-blasting. And Lopez was probably calling the Base right now. Fifteen minutes for Towers to suit up and get here, maybe a short dicker-then whoosh! the party is over.

Fifteen minutes - In fifteen minutes the bombs might fall back into the hands of the conspirators; in fifteen minutes he must make the bombs unusable.

An atom bomb is just two or more pieces of fissionable metal, such as plutonium. Separated, they are no more explosive than a pound of

butter; slapped together, they explode. The complications lie in the gadgets and circuits and gun used to slap them together in the exact way and at the exact time and place required.

These circuits, the bomb's "brain," are easily destroyed - but the bomb itself is hard to destroy because of its very simplicity. Johnny decided to smash the "brains" - and quickly!

The only tools at hand were simple ones used in handling the bombs. Aside from a Geiger counter, the speaker on the walkie-talkie circuit, a television rig to the base, and the bombs themselves, the room was bare. A bomb to be worked on was taken elsewhere-not through fear of explosion, but to reduce radiation exposure for personnel. The radioactive material in a bomb is buried in a "tamper" - in these bombs, gold. Gold stops alpha, beta, and much of the deadly gamma radiation - but not neutrons.

The slippery, poisonous neutrons which plutonium gives off had to escape, or a chain reaction - explosion! - would result. The room was bathed in an invisible, almost undetectable rain of neutrons. The place was unhealthy; regulations called for staying in it as short a time as possible.

The Geiger counter clicked off the "background" radiation, cosmic rays, the trace of radioactivity in the Moon's crust, and secondary radioactivity set up all through the room by neutrons. Free neutrons have the nasty trait of infecting what they strike, making it radioactive, whether it be concrete wall or human body. In time the room would have to be abandoned.

Dahlquist twisted a knob on the Geiger counter; the instrument stopped clicking. He had used a suppressor circuit to cut out noise of "background" radiation at the level then present. It reminded him uncomfortably of the danger of staying here. He took out the radiation exposure film all radiation personnel carry; it was a direct-response type and had been fresh when he arrived. The most sensitive end was faintly darkened already. Half way down the film a red line crossed it. Theoretically, if the wearer was exposed to enough radioactivity in a week to darken the film to that line, he was, as Johnny reminded himself, a "dead duck".

Off came the cumbersome space suit; what he needed was speed. Do the job and surrender-better to be a prisoner than to linger in a place as "hot" as this.

He grabbed a ball hammer from the tool rack and got busy, pausing only to switch off the television pick-up. The first bomb bothered him. He started to smash the covet plate of the "brain," then stopped, filled with reluctance. All his life he had prized fine apparatus.

He nerved himself and swung; glass tinkled, metal creaked. His mood changed; he began to feel a shameful pleasure in destruction. He pushed on with enthusiasm, swinging, smashing, destroying!

So intent was he that he did not at first hear his name called. "Dahlquist! Answer me! Are you there?"

He wiped sweat and looked at the TV screen. Towers' perturbed features stared out.

Johnny was shocked to find that he had wrecked only six bombs. Was he going to be caught before he could finish? Oh, no! He had to finish. Stall, son, stall! "Yes, Colonel? You called me?"

"I certainly did! What's the meaning of this?"

"I'm sorry, Colonel."

Towers' expression relaxed a little. "Turn on your pick-up, Johnny, I can't see you. What was that noise?"

"The pick-up is on," Johnny lied. "It must be out of order. That noise- uh, to tell the truth, Colonel, I was fixing things so that nobody could get in here."

Towers hesitated, then said firmly, "I'm going to assume that you are sick and send you to the Medical Officer. But I want you to come out of there, right away. That's an order, Johnny."

Johnny answered slowly. "I can't just yet, Colonel. I came here to make up my mind and I haven't quite made it up. You said to see you after lunch."

"I meant you to stay in your quarters."

"Yes, sir. But I thought I ought to stand watch on the bombs, in case I decided you were wrong."

"It's not for you to decide, Johnny. I'm your superior officer. You are sworn to obey me."

"Yes, sir." This was wasting time; the old fox might have a squad on

the way now. "But I swore to keep the peace, too. Could you come out here and talk it over with me? I don't want to do the wrong thing."

Towers smiled. "A good idea, Johnny. You wait there. I'm sure you'll see the light." He switched off.

"There," said Johnny. "I hope you're convinced that I'm a half-wit-you slimy mistake!" He picked up the hammer, ready to use the minutes gained.

He stopped almost at once; it dawned on him that wrecking the "brains" was not enough. There were no spare "brains," but there was a well-stocked electronics shop. Morgan could jury-rig control circuits for bombs. Why, he could himself - not a neat job, but one that would work. Damnation! He would have to wreck the bombs themselves - and in the next ten minutes.

But a bomb was solid chunks of metal, encased in a heavy tamper, all tied in with a big steel gun. It couldn't be done - not in ten minutes.

Damn!

Of course, there was one way. He knew the control circuits; he also knew how to beat them. Take this bomb: if he took out the safety bar, unhooked the proximity circuit, shorted the delay circuit, and cut in the arming circuit by hand - then unscrewed that and reached in there, he could, with just a long, stiff wire, set the bomb off.

Blowing the other bombs and the valley itself to Kingdom Come.

Also Johnny Dahlquist. That was the rub.

All this time he was doing what he had thought out, up to the step of actually setting off the bomb. Ready to go, the bomb seemed to threaten, as if crouching to spring. He stood up, sweating.

He wondered if he had the courage. He did not want to funk - and hoped that he would. He dug into his jacket and took out a picture of Edith and the baby. "Honeychild," he said, "if I get out of this, I'll never even try to beat a red light." He kissed the picture and put it back. There was nothing to do but wait.

What was keeping Towers? Johnny wanted to make sure that Towers was in blast range. What a joke on the jerk! Me sitting here, ready to throw the switch on him. The idea tickled him; it led to a better: why blow himself up - alive?

There was another way to rig it - a "dead man" control. Jigger up some way so that the last step, the one that set off the bomb, would not happen as long as he kept his hand on a switch or a lever or something. Then, if they blew open the door, or shot him, or anything - up goes the balloon!

Better still, if he could hold them off with the threat of it, sooner or later help would come - Johnny was sure that most of the Patrol was not in this stinking conspiracy - and then: Johnny comes marching home! What a reunion! He'd resign and get a teaching job; he'd stood his watch.

All the while, he was working. Electrical? No, too little time. Make it a simple mechanical linkage. He had it doped out but had hardly begun to build it when the loudspeaker called him. "Johnny?"

"That you, Colonel?" His hands kept busy.

"Let me in."

"Well, now, Colonel, that wasn't in the agreement." Where in blue blazes was something to use as a long lever?

"I'll come in alone, Johnny, I give you my word. We'll talk face to face."

His word! "We can talk over the speaker, Colonel." Hey, that was it-a yardstick, hanging on the tool rack.

"Johnny, I'm warning you. Let me in, or I'll blow the door off."

A wire-he needed a wire, fairly long and stiff. He tore the antenna from his suit. "You wouldn't do that, Colonel. It would ruin the bombs."

"Vacuum won't hurt the bombs. Quit stalling."

"Better check with Major Morgan. Vacuum won't hurt them; explosive decompression would wreck every circuit." The Colonel was not a bomb specialist; he shut up for several minutes. Johnny went on working.

"Dahlquist," Towers resumed, "that was a clumsy, lie. I checked with Morgan. You have sixty seconds to get into your suit, if you aren't already. I'm going to blast the door."

"No, you won't," said Johnny. "Ever hear of a 'dead man' switch?" Now for a counterweight-and a sling.

"Eh? What do you mean?"

"I've rigged number seventeen to set off by hand. But I put in a gimmick. It won't blow while I hang on to a strap I've got in my hand. But if anything happens to me - up she goes! You are about fifty feet from the blast center. Think it over."

There was a short silence. "I don't believe you."

"No? Ask Morgan. He'll believe me. He can inspect it, over the TV pickup." Johnny lashed the belt of his space suit to the end of the yardstick.

"You said the pick-up was out of order."

"So I lied. This time I'll prove it. Have Morgan call me."

Presently Major Morgan's face appeared. "Lieutenant Dahlquist?"

"Hi, Stinky. Wait a sec." With great care Dahlquist made one last connection while holding down the end of the yardstick. Still careful, he shifted his grip to the belt, sat down on the floor, stretched an arm and switched on the TV pick-up, "Can you see me, Stinky?"

"I can see you," Morgan answered stiffly. "What is this nonsense?"

"A little surprise I whipped up." He explained it-what circuits he had cut out, what ones had been shorted, just how the jury-rigged mechanical sequence fitted in.

Morgan nodded. "But you're bluffing, Dahlquist. I feel sure that you haven't disconnected the 'K' circuit. You don't have the guts to blow yourself up."

Johnny chuckled. "I sure haven't. But that's the beauty of it. It can't go off, so long as I am alive. If your greasy boss, ex-Colonel Towers, blasts the door, then I'm dead and the bomb goes off. It won't matter to me, but it will to him. Better tell him." He switched off.

Towers came on over the speaker shortly. "Dahlquist?"

"I hear you."

"There's no need to throw away your life. Come out and you will be

retired on full pay. You can go home to your family. That's a promise."

Johnny got mad. "You keep my family out of this!"

"Think of them, man."

"Shut up. Get back to your hole. I feel a need to scratch and this whole shebang might just explode in your lap."

2

JOHNNY SAT UP with a start. He had dozed, his hand hadn't let go the sling, but he had the shakes when he thought about it.

Maybe he should disarm the bomb and depend on their not daring to dig him out? But Towers' neck was already in hock for treason; Towers might risk it. If he did and the bomb were disarmed, Johnny would be dead and Towers would have the bombs. No, he had gone this far; he wouldn't let his baby girl grow up in a dictatorship just to catch some sleep.

He heard the Geiger counter clicking and remembered having used the suppressor circuit The radioactivity in the room must be increasing, perhaps from scattering the "brain" circuits-the circuits were sure to be infected; they had lived too long too close to plutonium. He dug out his film.

The dark area was spreading toward the red line.

He put it back and said, "Pal, better break this deadlock or you are going to shine like a watch dial." It was a figure of speech; infected animal tissue does not glow-it simply dies, slowly.

The TV screen lit up; Towers' face appeared. "Dahlquist? I want to talk to you."

"Go fly a kite."

"Let's admit you have us inconvenienced."

"Inconvenienced, hell-I've got you stopped."

"For the moment I'm arranging to get more bombs-"

"Liar."

"-but you are slowing us up. I have a proposition."

"Not interested."

"Wait. When this is over I will be chief of the world government. If you cooperate, even now, I will make you my administrative head."

Johnny told him what to do with it. Towers said, "Don't be stupid. What do you gain by dying?"

Johnny grunted. "Towers, what a prime stinker you are. You spoke of my family. I'd rather see them dead than living under a two-bit Napoleon like you. Now go away-I've got some thinking to do."

Towers switched off.

Johnny got out his film again. It seemed no darker but it reminded, him forcibly that time was running out. He was hungry and thirsty-and he could not stay awake forever. It took four days to get a ship up from Earth; he could not expect rescue any sooner. And he wouldn't last four days-once the darkening spread past the red line he was a goner.

His only chance was to wreck the bombs beyond repair, and get out-before that film got much darker.

He thought about ways, then got busy. He hung a weight on the sling, tied a line to it. If Towers blasted the door, he hoped to jerk the rig loose before he died.

There was a simple, though arduous, way to wreck the bombs beyond any capacity of Moon Base to repair them. The heart of each was two hemispheres of plutonium, their flat surfaces polished smooth to permit perfect contact when slapped together. Anything less would prevent the chain reaction on which atomic explosion depended.

Johnny started taking apart one of the bombs.

He had to bash off four lugs, then break the glass envelope around the inner assembly. Aside from that the bomb came apart easily. At last he had in front of him two gleaming, mirror-perfect half globes.

A blow with the hammer-and one was no longer perfect. Another blow and the second cracked like glass; he had tapped its crystalline structure just right.

Hours later, dead tired, he went back to the armed bomb. Forcing himself to steady down, with extreme care he disarmed it. Shortly its

silvery hemispheres too were useless. There was no longer a usable bomb in the room-but huge fortunes in the most valuable, most poisonous, and most deadly metal in the known world were spread around the floor.

Johnny looked at the deadly stuff. "Into your suit and out of here, son," he said aloud. "I wonder what Towers will say?"

He walked toward the rack, intending to hang up the hammer. As he passed, the Geiger counter chattered wildly.

Plutonium hardly affects a Geiger counter; secondary infection from plutonium does. Johnny looked at the hammer, then held it closer to the Geiger counter. The counter screamed...

Johnny tossed it hastily away and started back toward his suit.

As he passed the counter it chattered again. He stopped short.

He pushed one hand close to the counter. Its clicking picked up to a steady roar. Without moving he reached into his pocket and took out his exposure film.

It was dead black from end to end.

3

PLUTONIUM TAKEN into the body moves quickly to bone marrow. Nothing can be done; the victim is finished. Neutrons from it smash through the body, ionizing tissue, transmuting atoms into radioactive isotopes, destroying and killing. The fatal dose is unbelievably small; a mass a tenth the size of a grain of table salt is more than enough-a dose small enough to enter through the tiniest scratch. During the historic "Manhattan Project" immediate high amputation was considered the only possible first-aid measure.

Johnny knew all this but it no longer disturbed him. He sat on the floor, smoking a hoarded cigarette, and thinking. The events of his long watch were running through his mind.

He blew a puff of smoke at the Geiger counter and smiled without humor to hear it chatter more loudly. By now even his breath was "hot" carbon-14, he supposed, exhaled from his blood stream as carbon dioxide. It did not matter.

There was no longer any point in surrendering, nor would he give

Towers the satisfaction-he would finish out this watch right here. Besides, by keeping up the bluff that one bomb was ready to blow, he could stop them from capturing the raw material from which bombs were made. That might be important in the long run.

He accepted, without surprise, the fact that he was not unhappy. There was a sweetness about having no further worries of any sort. He did not hurt, he was not uncomfortable, he was no longer even hungry. Physically he still felt fine and his mind was at peace. He was dead - he knew that he was dead; yet for a time he was able to walk and breathe and see and feel.

He was not even lonesome. He was not alone; there were comrades with him - the boy with his finger in the dike, Colonel Bowie, too ill to move but insisting that he be carried across the line, the dying Captain of the Chesapeake still with deathless challenge on his lips, Rodger Young peering into the gloom. They gathered about him in the dusky bomb room.

And of course there was Edith. She was the only one he was aware of. Johnny wished that he could see her face more clearly. Was she angry? Or proud and happy?

Proud though unhappy - he could see her better now and even feel her hand. He held very still.

Presently his cigarette burned down to his fingers. He took a final puff, blew it at the Geiger counter, and put it out. It was his last. He gathered several butts and fashioned a roll-your-own with a bit of paper found in a pocket. He lit it carefully and settled back to wait for Edith to show up again. He was very happy.

He was still propped against the bomb case, the last of his salvaged cigarettes cold at his side, when the speaker called out again. "Johnny? Hey, Johnny! Can you hear me? This is Kelly. It's all over. The Lafayette landed and Towers blew his brains out. Johnny? Answer me."

When they opened the outer door, the first man in carried a Geiger counter in front of him on the end of a long pole. He stopped at the threshold and backed out hastily. "Hey, chief!" he called. "Better get some handling equipment - uh, and a lead coffin, too."

"Four days it took the little ship and her escort to reach Earth. Four days while all of Earth's people awaited her arrival. For ninety-eight hours all commercial programs were off television; instead there was

an endless dirge - the Dead March from Saul, the Valhalla theme, Going Home, the Patrol's own Landing Orbit.

"The nine ships landed at Chicago Port. A drone tractor removed the casket from the small ship; the ship was then refueled and blasted off in an escape trajectory, thrown away into outer space, never again to be used for a lesser purpose.

"The tractor progressed to the Illinois town where Lieutenant Dahlquist had been born, while the dirge continued. There it placed the casket on a pedestal, inside a barrier marking the distance of safe approach. Space marines, arms reversed and heads bowed, stood guard around it; the crowds stayed outside this circle. And still the dirge continued.

"When enough time had passed, long, long after the heaped flowers had withered, the lead casket was enclosed in marble, just as you see it today."

ALL YOU ZOMBIES

2217 Time Zone V (EST) 7 Nov. 1970-NTC- "Pop's Place":

I was polishing a brandy snifter when the Unmarried Mother came in. I noted the time-10: 17 P. M. zone five, or eastern time,

November 7th, 1970. Temporal agents always notice time and date; we must.

The Unmarried Mother was a man twenty-five years old, no taller than I am, childish features and a touchy temper. I didn't like his looks - I never had - but he was a lad I was here to recruit, he was my boy. I gave him my best barkeep's smile.

Maybe I'm too critical. He wasn't swish; his nickname came from what he always said when some nosy type asked him his line: "I'm an unmarried mother. -- If he felt less than murderous he would add: "at four cents a word. I write confession stories. --

If he felt nasty, he would wait for somebody to make something of it. He had a lethal style of infighting, like a female cop - reason I wanted him. Not the only one.

He had a load on, and his face showed that he despised people more than usual. Silently I poured a double shot of Old

Underwear and left the bottle. He drank it, poured another.

I wiped the bar top. -- How's the "Unmarried Mother" racket? --

His fingers tightened on the glass and he seemed about to throw it at me; I felt for the sap under the bar. In temporal manipulation you try to figure everything, but there are so many factors that you never take needless risks.

I saw him relax that tiny amount they teach you to watch for in the Bureau's training school. -- Sorry, " I said.

-- Just asking, "How's business? " Make it "How's the weather?

--

He looked sour. -- Business is okay. I write "em, they print "em, I eat. --

I poured myself one, leaned toward him. -- Matter of fact, " I said, "you write a nice stick - I've sampled a few.

You have an amazingly sure touch with the woman's angle. --

It was a slip I had to risk; he never admitted what pen-names he used. But he was boiled enough to pick up only the last: "'Woman's angle! "" he repeated with a snort. -- Yeah, I know the woman's angle. I should. --

"So? -- I said doubtfully. -- Sisters? --

"No. You wouldn't believe me if I told you. --

"Now, now, " I answered mildly, "bartenders and psychiatrists learn that nothing is stranger than truth. Why, son, if you heard the stories I do-well, you'd make yourself rich. Incredible. --

"You don't know what "incredible" means! "

"So? Nothing astonishes me. I've always heard worse. --

He snorted again. -- Want to bet the rest of the bottle? --

"I'll bet a full bottle. -- I placed one on the bar.

"Well-" I signaled my other bartender to handle the trade. We were at the far end, a single-stool space that I kept private by loading the bar

top by it with jars of pickled eggs and other clutter. A few were at the other end watching the fights and somebody was playing the juke box-private as a bed where we were.

"Okay, " he began, "to start with, I'm a bastard. --

"No distinction around here, " I said.

"I mean it, " he snapped. -- My parents weren't married. --

"Still no distinction, " I insisted. -- Neither were mine. --

"When-" He stopped, gave me the first warm look I ever saw on him. -- You mean that? --

"I do. A one-hundred-percent bastard. In fact, " I added, "no one in my family ever marries. All bastards.

"Oh, that. -- I showed it to him. -- It just looks like a wedding ring; I wear it to keep women off. -- It is an antique I bought in 1985 from a fellow operative - he had fetched it from pre-Christian Crete. -- The Worm Ouroboros... the World Snake that eats its own tail, forever without end. A symbol of the Great Paradox. --

He barely glanced at it. -- if you're really a bastard, you know how it feels. When I was a little girl-"

"Wups! " I said. -- Did I hear you correctly? --

"'Who's telling this story? When I was a little girl-Look, ever hear of Christine Jorgenson? Or Roberta Cowell?

--

"Uh, sex-change cases? You're trying to tell me-"

"Don't interrupt or swelp me, I won't talk. I was a foundling, left at an orphanage in Cleveland in 1945 when I was a month old. When I was a little girl, I envied kids with parents. Then, when I learned about sex-and, believe me, Pop, you learn fast in an orphanage-"

"I know "

"-I made a solemn vow that any kid of mine would have both a pop and a mom. It kept me "pure, " quite a feat in that vicinity - I had to learn to fight to manage it. Then I got older and realized I stood darn little chance of getting married - for the same reason I hadn't been

adopted --. He scowled. I was horse-faced and buck-toothed, flat-chested and straight-haired.

"You don't look any worse than I do. --

"Who cares how a barkeep looks? Or a writer? But peaple wanting to adopt pick little blue-eyed golden-haired moron.

Later on, the boys want bulging breasts, a cute face, and an

Oh-you-wonderful-male manner. -- He shrugged. I couldn't compete. So I decided to join the W. E. N. C. H. E. S. --

Eh? --

"Women's Emergency National Corps, Hospitality &

Entertainment Section, what they now call "Space

Angels'-Auxiliary Nursing Group, Extraterrestrial Legions. --

I knew both terms, once I had them chronized. We use still a third name, it's that elite military service corps:

Women's Hospitality Order Refortifying & Encouraging Spacemen.

Vocabulary shift is the worst hurdle in time-jumps - did you know that "service station" once fractions? Once on an assignment in the Churchill Era, a woman said to me, "Meet me at the service station next door -- - which is not what it sounds; a service station" (then) wouldn't have a bed in it.

He went on: "It was when they first admitted you can't send men into space for months and years and not relieve the tension. You remember how the wowsers screamed? - that improved my chance, since volunteers were scarce. A gal had to be respectable, preferably virgin (they liked to train them from scratch), above average mentally, and stable emotionally. But most volunteers were old hookers, or neurotics who would crack up ten days off Earth. So I didn't need looks; if they accepted me, they would fix my buck teeth, put a wave in my hair, teach me to walk and dance and how to listen to a man pleasingly, and everything else - plus training for the prime duties. They would even use plastic surgery if it would help - nothing too good for our Boys.

"Best yet, they made sure you didn't get pregnant during your

enlistment - and you were almost certain to marry at the end of your hitch. Same way today, A. N. G. E. L. S. marry spacers - they talk the language.

"When I was eighteen I was placed as a `mother's helper'. This family simply wanted a cheap servant, but I didn't mind as I couldn't enlist till I was twenty-one. I did housework and went to night school - pretending to continue my high school typing and shorthand but going to a charm class instead, to better my chances for enlistment.

"Then I met this city slicker with his hundred-dollar bills. -- He scowled. The no-good actually did have a wad of hundred-dollar bills. He showed me one night, told me to help myself.

"But I didn't. I liked him. He was the first man I ever met who was nice to me without trying games with me. I quit night school to see him oftener. It was the happiest time of my life.

"Then one night in the park the games began. --

He stopped. I said, "And then? --

"And then nothing! I never saw him again. He walked me home and told me he loved me-and kissed me good-night and never came back. -- He looked grim. -- If I could find him, I'd kill him! "

"Well, " I sympathized, "I know how you feel. But killing him-just for doing what comes naturally - hmm... Did you struggle? --

"Huh? What's that got to do with it? --

"Quite a bit. Maybe he deserves a couple of broken arms for running out on you, but-"

"He deserves worse than that! Wait till you hear.

Somehow I kept anyone from suspecting and decided it was all for the best. I hadn't really loved him and probably would never love anybody-and I was more eager to join the WE. N. C.

H. E. S. than ever. I wasn't disqualified, they didn't insist on virgins. I cheered up.

"It wasn't until my skirts got tight that I realized.

--

"Pregnant? --

"He had me higher "n a kite! Those skinflints I lived with ignored it as long as I could work-then kicked me out, and the orphanage wouldn't take me back. I landed in a charity ward surrounded by other big bellies and trotted bedpans until my time came.

"One night I found myself on an operating table, with a nurse saying, "Relax. Now breathe deeply. "

"I woke up in bed, numb from the chest down. My surgeon came in. "How do you feel? " he says cheerfully.

"Like a mummy. --

"Naturally. You're wrapped like one and full of dope to keep you numb. You'll get well-but a Cesarean isn't a hangnail.

"

Cesarean" I said. "Doc - did I lose the baby? "

Oh, no. Your baby's fine. "

Oh. Boy or girl? "

"'A healthy little girt. Five pounds, three ounces. "

"I relaxed. It's something, to have made a baby. I told myself I would go somewhere and tack "Mrs. " on my name and let the kid think her papa was dead -no orphanage for my kid!

"But the surgeon was talking. "Tell me, uh-" He avoided my name. "did you ever think your glandular setup was odd? "

"I said, "Huh? Of course not. What are you driving at?

"

"He hesitated. I'll give you this in one dose, then a hypo to let you sleep off your jitters. You'll have "em. "

"'Why? I demanded.

Ever hear of that Scottish physician who was female until she was thirtyfive? -then had surgery and became legally and medically a man? Got married. All okay. "

'What's that got to do with me? "

"'That's what I'm saying. You're a man. "

"I tried to sit up. What? "

"Take it easy. When I opened you, I found a mess. I sent for the Chief of Surgery while I got the baby out, then we held a consultation with you on the table-and worked for hours to salvage what we could. You had two full sets of organs, both immature, but with the female set well enough developed for you to have a baby. They could never be any use to you again, so we took them out and rearranged things so that you can develop properly as a man. He put a hand on me. "Don't worry. You're young, your bones will readjust, we'll watch your glandular balance - and make a fine young man out of you. "

"I started to cry. "What about my baby? "

"Well, you can't nurse her, you haven't milk enough for a kitten. If I were you, I wouldn't see her-put her up for adoption. "

"'No! "

"He shrugged. "The choice is yours; you're her mother - well, her parent. But don't worry now; we'll get you well first. "

"Next day they let me see the kid and I saw her daily - trying to get used to her. I had never seen a brand-new baby and had no idea how awful they look - my daughter looked like an orange monkey. My feelings changed to cold determination to do right by her. But four weeks later that didn't mean anything. --

"Eh? --

"She was snatched. --

"'Snatched? --

The Unmarried Mother almost knocked over the bottle we had bet. -- Kidnapped - stolen from the hospital nursery! " He breathed hard. -- How's that for taking the last a man's got to live for? --

"A bad deal, " I agreed. -- Let's pour you another. No clues? --

"Nothing the police could trace. Somebody came to see her, claimed to be her uncle. While the nurse had her back turned, he walked out with her. --

"Description? --

"Just a man, with a face-shaped face, like yours or mine. -- He frowned. -- I think it was the baby's father. The nurse swore it was an older man but he probably used makeup.

Who else would swipe my baby? Childless women pull such stunts

- but whoever heard of a man doing it? --

"What happened to you then? --

"Eleven more months of that grim place and three operations. In four months I started to grow a beard; before I was out I was shaving regularly... and no longer doubted that I was male. -- He grinned wryly. -- I was staring down nurses necklines. --

"Well, " I said, "seems to me you came through okay.

Here you are, a normal man, making good money, no real troubles. And the life of a female is not an easy one. --

He glared at me. -- A lot you know about it! "

"So? --

"Ever hear the expression "a ruined woman'? --

"Mmm, years ago. Doesn't mean much today. --

"I was as ruined as a woman can be; that bum really ruined me - I was no longer a woman... and I didn't know how to be a man. --

"Takes getting used to, I suppose. --

"You have no idea. I don't mean learning how to dress, or not walking into the wrong rest room; I learned those in the hospital. But how could I live? What job could I get? Hell, I couldn't even drive a car. I didn't know a trade; I couldn't do manual labor-too much scar tissue, too tender.

"I hated him for having ruined me for the W. E. N. C.

H. E. S., too, but I didn't know how much until I tried to join the Space Corps instead. One look at my belly and I was marked unfit for military service. The medical officer spent time on me just from curiosity; he had read about my case.

"So I changed my name and came to New York. I got by as a fry cook, then rented a typewriter and set myself up as a public stenographer - what a laugh! In four months I typed four letters and one manuscript. The manuscript was for Real Life

Tales and a waste of paper, but the goof who wrote it sold it.

Which gave me an idea; I bought a stack of confession magazines and studied them. -- He looked cynical. -- Now you know how I get the authentic woman's angle on an unmarried-mother story... through the only version I haven't sold - the true one. Do I win the bottle? --

I pushed it toward him. I was upset myself, but there was work to do. I said, "Son, you still want to lay hands on that so-and-so? --

His eyes lighted up-a feral gleam.

"Hold it! " I said. -- You wouldn't kill him? --

He chuckled nastily. -- Try me. --

"Take it easy. I know more about it than you think I do. I can help you. I know where he is. --

He reached across the bar. -- Where is he? --

I said softly, "Let go my shirt, sonny-or you'll land in the alley and we'll tell the cops you fainted. -- I showed him the sap.

He let go. -- Sorry. But where is he? -- He looked at me. -- And how do you know so much? --

"All in good time. There are records - hospital records, orphanage records, medical records. The matron of your orphanage was Mrs. Fetherage - right? She was followed by Mrs.

Gruenstein - right? Your name, as a girl, was "Jane" - right?

And you didn't tell me any of this - right? --

I had him baffled and a bit scared. -- What's this? You trying to make trouble for me? --

"No indeed. I've your welfare at heart. I can put this character in your lap. You do to him as you see fit - and I guarantee that you'll get away with it. But I don't think you'll kill him. You'd be nuts to - and you aren't nuts. Not quite. --

He brushed it aside. -- Cut the noise. Where is he? --

I poured him a short one; he was drunk, but anger was offsetting it. -- Not so fast. I do something for you - you do something for me. --

"Uh... what? --

"You don't like your work. What would you say to high pay, steady work, unlimited expense account, your own boss on the job, and lots of variety and adventure? --

He stared. -- I'd say, "Get those goddam reindeer off my roof! " Shove it, Pop - there's no such job. --

"Okay, put it this way: I hand him to you, you settle with him, then try my job. If it's not all I claim - well, I can't hold you. --

He was wavering; the last drink did it "When d'yuh d'liver "im? -- he said thickly.

He shoved out his hand. -- It's a deal! "

"If it's a deal-right now! "

I nodded to my assistant to watch both ends, noted the time - 2300 - started to duck through the gate under the bar - when the juke box blared out: "I'm My Own Grandpaw! " The service man had orders to load it with Americana and classics because I couldn't stomach the "music" of 1970, but I hadn't known that tape was in it. I called out, "Shut that off! Give the customer his money back. -- I added, "Storeroom, back in a moment, " and headed there with my Unmarried Mother following.

It was down the passage across from the johns, a steel door to which no one but my day manager and myself had a key; inside was a door to an inner room to which only I had a key.

We went there.

He looked blearily around at windowless walls. -- Where is he? --

"Right away. -- I opened a case, the only thing in the room; it was a U. S. F. F. Coordinates Transformer Field Kit, series 1992, Mod. II - a beauty, no moving parts, weight twenty-three kilos fully charged, and shaped to pass as a suitcase. I had adjusted it precisely earlier that day; all I had to do was to shake out the metal net which limits the

transformation field.

Which I did. -- What's that? -- he demanded.

"Time machine, " I said and tossed the net over us.

"Hey! " he yelled and stepped back. There is a technique to this; the net has to be thrown so that the subject will instinctively step back onto the metal mesh, then you close the net with both of you inside completely-else you might leave shoe soles behind or a piece of foot, or scoop up a slice of floor. But that's all the skill it takes. Some agents con a subject into the net; I tell the truth and use that instant of utter astonishment to flip the switch. Which I did.

1030-VI-3 April 1963 - Cleveland, Ohio-Apex Bldg.:

"Hey! " he repeated. -- Take this damn thing off! "

"Sorry, " I apologized and did so, stuffed the net into the case, closed it. -- You said you wanted to find him. --

"But - you said that was a time machine! "

I pointed out a window. -- Does that look like

November? Or New York? -- While he was gawking at new buds and spring weather, I reopened the case, took out a packet of hundred-dollar bills, checked that the numbers and signatures were compatible with 1963. The Temporal Bureau doesn't care how much you spend (it costs nothing) but they don't like unnecessary anachronisms. Too many mistakes, and a general court-martial will exile you for a year in a nasty period, say

1974 with its strict rationing and forced labor. I never make such mistakes; the money was okay.

He turned around and said, "What happened? --

"He's here. Go outside and take him. Here's expense money. -- I shoved it at him and added, "Settle him, then I'll pick you up. --

Hundred-dollar bills have a hypnotic effect on a person not used to them. He was thumbing them unbelievingly as I eased him into the hall, locked him out. The next jump was easy, a small shift in era.

7100-VI-10 March 1964 - Cleveland-Apex Bldg.: There was a notice under the door saying that my lease expired next week; otherwise the

room looked as it had a moment before. Outside, trees were bare and snow threatened; I hurried, stopping only for contemporary money and a coat, hat, and topcoat I had left there when I leased the room. I hired a car, went to the hospital. It took twenty minutes to bore the nursery attendant to the point where I could swipe the baby without being noticed. We went back to the Apex Building. This dial setting was more involved, as the building did not yet exist in 1945.

But I had precalculated it.

0100-VI-20 Sept. 1945 - Cleveland-Skyview Motel:: Field kit, baby, and I arrived in a motel outside town. Earlier I had registered as "Gregory Johnson, Warren, Ohio, " so we arrived in a room with curtains closed, windows locked, and doors bolted, and the floor cleared to allow for waver as the machine hunts. You can get a nasty bruise from a chair where it shouldn't be - not the chair, of course, but backlash from the field.

No trouble. Jane was sleeping soundly; I carried her out, put her in a grocery box on the seat of a car I had provided earlier, drove to the orphanage, put her on the steps, drove two blocks to a "service station" (the petroleum-products sort) and phoned the orphanage, drove back in time to see them taking the box inside, kept going and abandoned the car near the motel - walked to it and jumped forward to the Apex

Building in 1963.

2200-VI-24 April 1963 - Cleveland-Apex Bldg.: I had cut the time rather fine - temporal accuracy depends on span, except on return to zero. If I had it right, Jane was discovering, out in the park this balmy spring night, that she wasn't quite as nice a girl as she had thought., I grabbed a taxi to the home of those skinflints, had the hackie wait around a comer while I lurked in shadows.

Presently I spotted them down the street, arms around each other. He took her up on the porch and made a long job of kissing her good-night-longer than I thought. Then she went in and he came down the walk, turned away. I slid into step and hooked an arm in his. -- That's all, son, " I announced quietly. -- I'm back to pick you up. --

"You! " He gasped and caught his breath.

"Me. Now you know who he is - and after you think it over you'll know who you are... and if you think hard enough, you'll figure out who the baby is... and who I am. --

He didn't answer, he was badly shaken. It's a shock to have it proved to you that you can't resist seducing yourself.

I took him to the Apex Building and we jumped again.

2300-VIII, 12 Aug. 1985-Sub Rockies Base: I woke the duty sergeant, showed my I. D., told the sergeant to bed my companion down with a happy pill and recruit him in the moming.

The sergeant looked sour, but rank is rank, regardless of era; he did what I said-thinking, no doubt, that the next time we met he might be the colonel and I the sergeant. Which can happen in our corps. -- What name? -- he asked.

I wrote it out. He raised his eyebrows. -- Like so, eh?

Hmm-"

"You just do your job, Sergeant. -- I turned to my companion.

"Son, your troubles are over. You're about to start the best job a man ever held-and you'll do well. I know. --

"That you will! " agreed the sergeant. -- Look at me - born in 1917-still around, still young, still enjoying life. --

I went back to the jump room, set everything on preselected zero.

2301-V-7 Nov. 1970-NYC -"Pop's Place": I came out of the storeroom carrying a fifth of Drambuie to account for the minute I had been gone. My assistant was arguing with the customer who had been playing "I'm My Own Grand-paw! " I said,

"Oh, let him play it, then unplug it. -- I was very tired.

It's rough, but somebody must do it, and it's very hard to recruit anyone in the later years, since the Mistake of

1972. Can you think of a better source than to pick people all fouled up where they are and give them well-paid, interesting

(even though dangerous) work in a necessary cause? Everybody knows now why the Fizzle War of 1963 fizzled. The bomb with New

York's number on it didn't go off, a hundred other things didn't go as planned-all arranged by the likes of me.

But not the Mistake of "72; that one is not our fault-and can't be undone; there's no paradox to resolve. A thing either is, or it isn't, now and forever amen. But there won't be another like it; an order dated "1992" takes precedence any year.

I closed five minutes early, leaving a letter in the cash register telling my day manager that I was accepting his offer to buy me out, to see my lawyer as I was leaving on a long vacation. The Bureau might or might not pick up his payments, but they want things left tidy. I went to the room in the back of the storeroom and forward to 1993.

2200-VII- 12 Jan 1993-Sub Rockies Annex-HQ Temporal

DOL: I checked in with the duty officer and went to my quarters, intending to sleep for a week. I had fetched the bottle we bet (after all, I won it) and took a drink before I wrote my report. It tasted foul, and I wondered why I had ever liked Old Underwear. But it was better than nothing; I don't like to be cold sober, I think too much. But I don't really hit the bottle either; other people have snakes-I have people.

I dictated my report; forty recruitments all okayed by the Psych Bureau - counting my own, which I knew would be okayed. I was here, wasn't I? Then I taped a request for assignment to operations; I was sick of recruiting. I dropped both in the slot and headed for bed.

My eye fell on "The By-Laws of Time, " over my bed:

Never Do Yesterday What Should Be Done Tomorrow.

If at Last You Do Succeed, Never Try Again.

A Stitch in Time Saves Nine Billion.

A Paradox May Be Paradoctored.

It Is Earlier When You Think.

Ancestors Are Just People.

Even Jove Nods.

They didn't inspire me the way they had when I was a recruit; thirty subjective-years of time-jumping wears you down. I undressed, and when I got down to the hide I looked at my belly. A Cesarean leaves a big scar, but I'm so hairy now that I don't notice it unless I look for it.

Then I glanced at the ring on my finger.

The Snake That Eats Its Own Tail, Forever and Ever. I know where I came from - but where did all you zombies come from?

I felt a headache coming on, but a headache powder is one thing I do not take. I did once - and you all went away.

So I crawled into bed and whistled out the light.

You aren't really there at all. There isn't anybody but me - Jane - here alone in the dark.

I miss you dreadfully!

Last-modified: Fri, 21-Feb-97 18:55:38 GMT